OLYMPUS

IS-3
IS-3000
REPAIR MANUAL

OLYMPUS OPTICAL CO., LTD.

OLYMPUS

IS-3
IS-3000
REPAIR MANUAL

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OLYMPUS OPTICAL CO., LTD.

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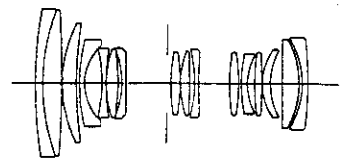
A. PRODUCT OUTLINE

I. Product outline

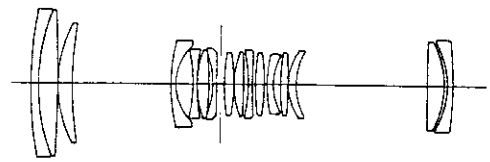
1) Product name	iS-3000 (for Europe and most other foreign regions)
House code	REE630
2) Product name	L-3 Quartz Date (for Japan) iS-3 DLX (Quartz Date) (for North America) iS-3000 Quartz Date (for Europe and most other foreign regions)
House code	REE631

II. Main functions and type

Type	35 mm autofocus single lens reflex camera with built-in 35 mm to 180 mm 5× zoom lens
Display size	24 × 36 mm (13 mm × 36 mm when using panorama adapter)
Lens	Olympus lens 35 mm to 180 mm ZOOM F 4.5 to 5.6 16 elements in 15 groups (ED lens,)
Angle of view W	63° to T: 14°
Zooming	Two speed powered zoom (low speed at first step of Zoom button, fast at second)
Focusing	Two speed powered 1st and 2st group repetition method (low speed at first step of Zoom button, fast at second)
Shooting range	Normal mode: 1.2 m to ∞ Macro zoom mode 0.6 m to ∞ (f = 35 mm to 120 mm)



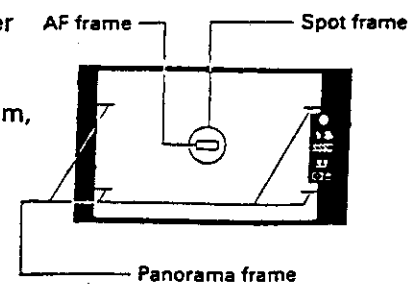
Wide



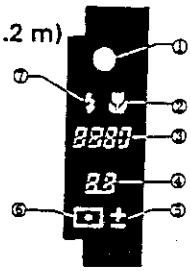
Tele

Shutter	
Type	Electronically controlled vertically running focal plane shutter
Exposure time	Bulb, 15 sec to 1/2000 sec
Synchronization speed	1/100 sec
Release	Two step electromagnetic release (AF at first step, release at second.)
Remote control	Wireless remote control for external release sold separately.

Viewfinder	
Type	TTL single lens reflex viewfinder
Field ratio	85% (compared with the actual size)
Magnification	0.75 × (at focal distance of 50 mm, distance to subject ∞)



Diopter	- 0.5 diop
Focusing screen	Full mat with AF target and panorama frame
Eyepoint	14.2 mm (from rear end of eyepiece lens)(6.3 mm from read end eyecup)
LCD display (viewfinder information)	① AF indicator (In focus: lit, Out of focus: flickers) ② Macro indicator • When focusing within macro zoom range: Lit (f = 35 to 120 mm, shooting distance: 0.6 to 1.2 m) • Focusing outside of macro zoom range: Off ③ Shutter speed display ④ Aperture value display ⑤ Exposure compensation / manual exposure indicator ⑥ Spot metering indicator ⑦ Flash charged / low luminance warning indicator • Charge indicator: Lit (when either built-in and external flash are charged, or if using both, only indicates when both built-in and external flash are charged). • Low luminance warning indicator: Blinks (when external flash is not in use or turned OFF, or when internal flash is down). *The LCD display will go out if no operation is made within about 25 seconds. *Pressing the Release button halfway, or pressing the Spot button will turn the LCD back on.



Shooting Modes

Exposure modes	① Program AE ② Aperture priority AE ③ Shutter priority AE ④ Manual exposure ⑤ Bulb ⑥ Program flash AE ⑦ Aperture priority flash AE ⑧ Shutter priority flash AE ⑨ Manual flash exposure
Intelligent modes	① Sports mode ② Portrait mode ③ Scenery mode ④ Night mode

Light Metering

Method	TTL metering method (storage type)
Type	① Fuzzy ESP metering (Program, portrait, sports, night, scenery) ② Center-weighted average metering (Aperture priority, shutter priority, manual metering) ③ Spot metering (AE lock): *Spot metering cannot be used when the flash is up or when using the night mode.
Photocell	2 piece SBC (Spot metering uses the AF sensor)
AE lock	AE locks when spot metering (Memory clears itself after each frame is shot.) *Press Spot button to store (" ⊡ " will appear on LCD inside the viewfinder.) Press again to clear memory. Memory clears itself after each frame is shot.
Metering luminance range	ESP : EV3 to EV20 Center-weighted average : EV3 to EV20 Spot : EV4 to EV17

Auto Focus

Method	TTL phase shifting method
Sensor	SPD line sensor
Sensing range	EV0 to EV18 (using ISO 100 without AF illuminator)
Operating method	Single or continuous operation
Focus lock	Single operation: Focus locks when subject is in focus while release button is pressed halfway. This also locks the AE function. (Focus does not lock for continuous operation.)
Focusing indicator	Focus indicator inside viewfinder lights up. Audible PCV will also be alerted(No audible sound on PF mode). If focus cannot be adjusted, indicator will blink (5 Hz), no PCV.
Low luminance AF illuminator	Lights up automatically in low lighted areas (low luminance) when ever the Release button is pressed halfway. (Darker than LV2)
Effective distance	approx. 7 m
Focusing range	from 1.2 m to ∞ (normal) ..... f = 120 to 185 mm from 0.6 m to 1.2 m (macro zoom range) ..... f = 35 to 120 mm

Manual Focus

2-speed powered focus.
Select PF mode with PF button and focus with zoom buttons.

Film speed

Method	Automatically set according to DX code (ISO 25 to 5000, in increments of 1/3) .
Film speeds	ISO 25, 32, 40, 50, 64, 80, 100, 125, 160, 200, 250, 320, 400, 500, 640, 800, 1000, 1250, 1600, 2000, 2500, 3200, 4000, 5000 • Film speed set to ISO 32 for films with no DX code. • Film speed set to ISO 5000 when no film in camera (whether rear cover is closed or not). (When the rear cover is open and the Self and Spot buttons are pressed simultaneously, the film speed will change to ISO 100 and the exposure counter will indicate " [--] ". Reset by closing the rear cover.)

Film loading, winding, and rewinding

Film loading system	Auto loading (film is fed automatically to first frame when rear cover is closed)
Winding	Electric powered winding
Rewinding	Automatic rewind system operates by detecting the end of film. Film can be rewound unconditionally by pressing the Rewinding button. (Rewinding stops automatically when the film enters its cartridge.)
Exposure counter	Incremental counter with automatic reset • Counter does not subtract when rewinding. Indicator on LCD panel resets to " [--] " • An "E" will flash on the LCD panel to indicate rewinding is complete.

Self timer

Type	Electronic self timer
Operating time	12 sec; Usage indicated by AF illuminator LED flashing at 2 Hz
To cancel	Self timer automatically cancels itself after taking picture.
To cancel before shooting	Press the Self button (while timer is still counting down) to stop.
To restart	Press the Release button.

Built-in flash

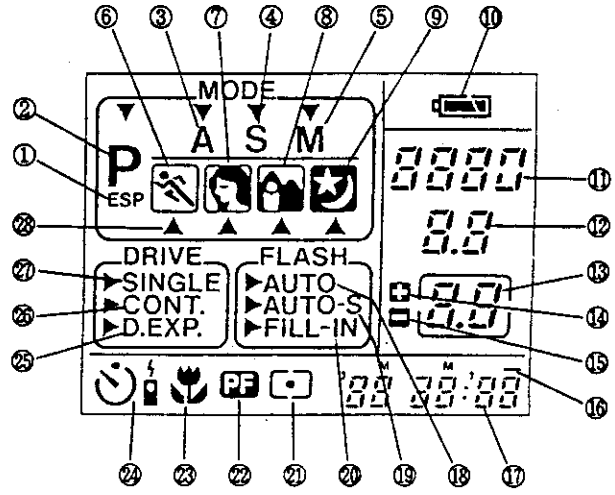
Type	Built-in flash with dual emitting tubes (manual pop-up type) • Tele (lower tube): Variable firing according to Guide No. and pre firing for relieving red-eye. • Wide (upper tube): Variable firing according to Guide No. and pre firing for relieving red-eye.

	• Tele or Wide switched automatically Flash fires on Tele side when all of these conditions are met:•Focal distance is on Tele side (f = 105 mm or more) • Shooting distance is 1.2 m or more (not in macro range). When using program, aperture priority, or shutter priority modes (not manual exposure) Otherwise, the flash will fire on the Wide side. • Both tubes cannot be fired at the same time
Coverage angle	Evenly covers an angle of view of 35 to 180 mm. Also covers macro modes. • Tele : Upper 6.1°, lower 9.8°, left and right 9.9° or more covers f = 103 mm (from 1.2 m to 7 m) • Wide: Upper 17.6°, lower 23.2°, left and right 26.2° or more cover f = 36 mm (from 0.6 m to 7 m, and in macro range)
Flash duration	16 us to 2.5 ms
Color temperature	5800° K
Guide number	Tele: 1.4 to 28 (variable Guide number control) Wide: 1.4 to 20 (variable Guide number control) • Manual mode: 20
Shooting distance range	Wide end: 0.6 m to 6.3 m (ISO 100, color negatives, B/W film, -1 EV) Tele end: 1.2 m to 7 m(ISO 100, color negatives, B/W film, -1 EV) * Wide firing is used when shooting closer than 1.2 m.
Recharge time	0.2 to 6 sec (new batteries, room temperature)
Flash prompt	When the flash is down and the luminance is low, " ϟ " will flash in the viewfinder to prompt the use of the flash. (Program or aperture priority modes only, night scene mode excluded.) * Speeds for low luminance warnings f = 35 to 52 mm : 1/30 sec or slower f = 53 to 80 mm : 1/45 sec or slower f = 81 to 180 mm : 1/60 sec or slower
Accessory shoe	Uses specially designed fixed mounting type shoe * Shoe will not accept the T series flashes or flashes manufactured by third parties.
Power supply	
Batteries	Two 3 V lithium single cell batteries (Duracell DL123A or Panasonic CR123A)
Battery life	About 20 rolls of 24 EX film (flash use rate 50%, tele to wide switched one round every two frames, room temperature.)
Data printing	REE 631 onlly
Data formats	Year, month, day / Day, hour, minute / No printing Day, month, year / Month, day, year
Printing position	Lower left of print (date will not appear on panorama prints when using the panorama adaptor.)
Data display	Data appears on LCD panel at all times
Clock function	Built-in quartz digital clock (monthly error +/– 90 sec, + 20 C) Automatic adjustment up to year 2019.
Film speed setting	Automatic setting • Sets to 100 when DX ISO 25 to 320 • Sets to 400 when DX ISO 400 to 5000
Batteries	Uses same batteries for operating camera.
Others	
Tripod screws	U 1/4 (unify screw 1/4 inch JIS B7103)
Filter diameter	55 mm P=0.75
Dimensions	122 mm (width) x 93 mm (height) x 173 mm (depth) (when barrel is contracted, excluding protrusions).
Weight	960 g (without batteries), 995 g (with batteries) (REE631)

LCD panel

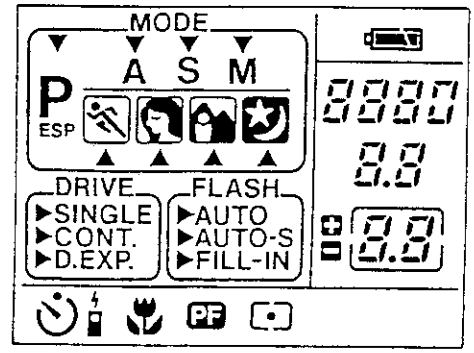
Display

① Fuzzy ESP metering
② Program mode
③ Aperture priority mode
④ Shutter priority mode
⑤ Manual mode
⑥ Sports mode (P.ESP also lights up)
⑦ Portrait mode (P.ESP also lights up)
⑧ Scenery mode (P.ESP also lights up)
⑨ Night mode (P.ESP also lights up)
⑩ Battery check
⑪ Shutter speed (flashes when not under control in P and A modes, 1/2000 or 15")
⑫ Aperture value (flashes when not under control in P mode)
⑬ Frame counter : indicates 'E' when auto-loading fails or after film rewinds. Exposure correction indication (-4.0 to + 4.0 EV)
⑭ Exposure level -0.375 to + 1.5 EV (Blinks above + 1.5 EV)
⑮ Exposure level -1.5 to + 0.375 EV (Blinks below – 1.5 EV)
⑯ Date superimpose monitor (REE631 only)
⑰ Date display (REE631 only)



REE 631

⑱ Flash auto mode (P, A, S modes) (Lights up only when flash is up)
⑲ Red-eye reduction flash mode (Lights up only when flash is up)
⑳ Flash Fill-in mode (Lights up only when flash is up)
㉑ Spot metering
㉒ Power focus
㉓ Zoom macro mode (lights up when f = 35 to 120 mm)
㉔ Self timer and Remote control
㉕ Double exposure mode (flashes after completing first shot)
㉖ Continuous mode
㉗ Single mode
㉘ Selecting mode index



REE 630

* All indicators (except for the date) will go out if no operation is made within 25 seconds.

Reset operation

Press the Mode button and the +/- compensation buttons simultaneously.
① The modes will reset to the modes indicated below :
② Battery condition will appear in the LCD panel:

① Mode reset
- Focus mode : AF
- Exposure mode : Program
- Drive mode : Single mode (If the first frame of a double exposure (D.EXP) has already been shot, that state will not be reset.)
- Flash mode: AUTO or AUTO-S
- The following modes will be canceled.

* Sports, portrait, night scene, macro, self timer, exposure correction, spot.
* The focusing position is reset to ∞.

② Battery check
- If batteries are OK : indicator stays on
- If batteries need replacing : indicator flashes
- If batteries are dead : indicator stays on

Demo mode ..... For operating without film

- The release, AF, AE, and flash are functional (ISO 5000 or equiva lent)
- Film winding will not operate without film
- Shutter is operable
- Rewinding can be force operated
- LCD inside viewfinder and LCD panel both work
- All other modes operate

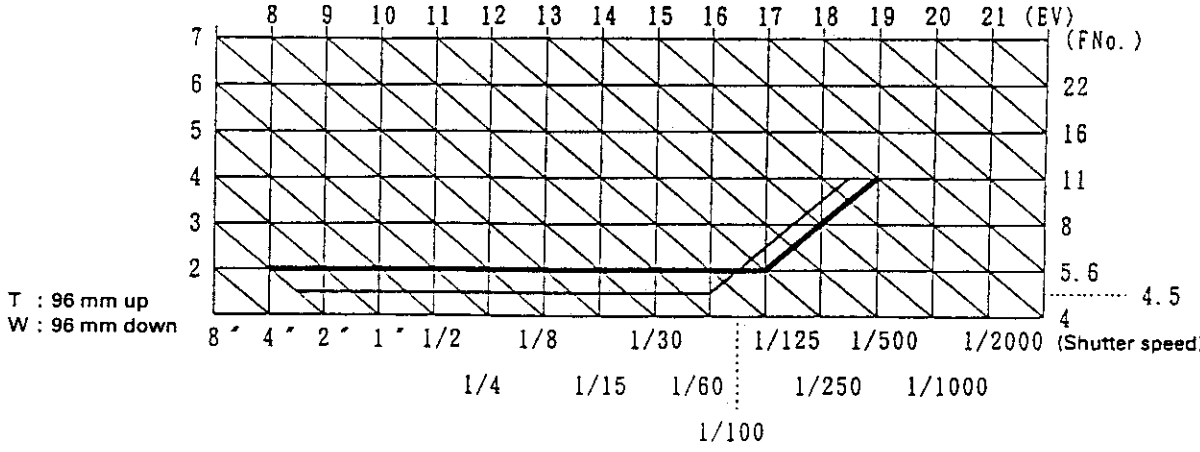
III. Basic functions of each mode and using procedures

Exposure mode

Program AE — Automatically shifts according to zoom

Automatic adjustment range — Since ESP compensation operates at high luminance levels, the range for ISO 100 film is equivalent to the range from EV3 to EV16.

Notice — A flashing shutter speed and aperture value display indicates that you are outside the AE mode.



Aperture priority AE — Suitable for shooting depth of fields.

To set — Press and hold the Mode button while pressing the Shift button (B or F) until 'A' appears in the LCD panel.

Setting the aperture — Press Shift button B until the desired aperture appears (aperture changes in increments of 0.5 EV)

Notice — Flashing shutter speed display indicates that you are outside the AE mode.

Shutter priority AE — Suitable for shooting fast moving subjects, or to capture blurriness from moving subjects.

To set — Press and hold the Mode button while pressing the Shift button (B or F) until 'S' appears in the LCD panel.

Setting the shutter speed — Turn Shift Dial F until the desired shutter speed appears (aperture changes in increments of 0.5 EV)

Manual exposure — For shooting with manually set aperture and shutter speeds.

To set — Press and hold the Mode button while pressing the Shift button (B or F) until 'M' appears in the LCD panel.

Setting the aperture — Press Shift button B until the desired aperture appears (aperture changes in increments of 0.5 EV)

Setting the shutter speed — Turn Shift Dial F until the desired shutter speed appears (aperture changes in increments of 0.5 EV)

Exposure level monitor

The exposure level can be confirmed on the LCD in the viewfinder or the LCD panel.

- ± lit: EV within ± 0.375
- + lit: EV between +0.375 and + 1.5
- ± flashing: EV +1.5 or more
- – lit: EV between –0.375 and –1.5
- – flashing: EV –1.5 or more

Notice

A flashing ± indicates that you are out of metering range.

Bulb shooting

Shutter stays open while the Release button is held down. Good for astrophotography or other photographic techniques requiring long exposure times.

To set

Press and hold the Mode button while pressing the Shift button (B or F) until "M" appears in the LCD panel. Turn Shift Dial F until "blb' appears in the LCD panel.

Setting the aperture

Press Shift button B until the desired aperture appears (aperture changes in increments of 0.5EV)

Intelligent mode

Sports mode

- This mode is good for fast moving subjects. (Aperture stays open while the shutter speed changes to a faster speed)
- The pre-flash does not operate in the AUTO-S mode in order to allow rapid response to moving subjects.

To set

Press and hold the Mode button while pressing the Shift button (B or F) until " " appears in the LCD panel.

* Automatically set or canceled modes:
  - AF mode
  - Program mode
  - Continuance mode (AF works for every other frame (odd num bered frames))
  - When using flash: AUTO or AUTO-S
  - The super macro mode will be canceled.

To cancel

Press and hold the Mode button while pressing the Shift button (B or F).

- Reset the mode. (i.e., press the Mode button and ± compensation button simultaneously)

Portrait mode

- This mode gives the background a hazy effect to portrait shots. (Auto zoom does not work in this mode)

To set

Press and hold the Mode button while pressing the Shift button (B or F) until " " appears in the LCD panel.

* Automatically set or canceled modes
  - Program mode (same program time chart as for the sports mode)
  - AF mode.
  - When using flash: AUTO or AUTO-S

To cancel

Press and hold the Mode button while pressing the Shift button (B or F). Reset the mode. (i.e., press the Mode button and ± compensation button simultaneously)

- Reset the mode

Scenery mode

Closes aperture, changes shutter speed, and gives priority to depth of field.

To set

Press and hold the Mode button while pressing the Shift button (B or F) until " " appears in the LCD panel.

* Automatically set modes:
- Program mode
- AF mode
- If using flash: AUTO or AUTO-S

To cancel

- Press and hold the Mode button while pressing the Shift button (B or F).
- Reset the mode. (i.e., press the Mode button and ± compensation button simultaneously)

Night scene mode

To shoot night scenes with a natural lighting effect.
- The maximum shutter speed is 15 seconds (AE works in conjunction for up to 4 sec in ISO 100 and Tele modes)
- Slow synchro can be used when the flash is used.
- The AE is set to the programmed EE of -1.0 EV.
- The quantity of light fired is controlled according by the Guide No. for -0.5 EV.

To set

Press and hold the Mode button while pressing the Shift button (B or F) until " " appears in the LCD panel.

* Automatically set or canceled modes:
- Program mode (same program time chart as for the sports mode)
- When using flash: AUTO or AUTO-S

* The recommended drive mode is Single.

Focusing

The AF function will attempt to focus on the subject.
- If AF fails when the AF illuminator is on, the AF program will automatically focus on the farthest subject and allow the shutter to be released at ∞.

To cancel

Press and hold the Mode button while pressing the Shift button (B or F).
- Reset the mode. (i.e., press the Mode button and ± compensation button simultaneously)

Zoom macro

Zoom macro enables the user to focus on subjects at the macro range from 0.6 to 1.2 m within 35 to 120 mm.

To set

Press the Macro button and confirm that the " " indicator lights up in the LCD panel.
- When f = 120 mm or more, the macro will automatically set to 120 mm. (Macro remains unchanged under 120 mm.)

To cancel

- Press the Macro button
- Reset the mode. (i.e., press the Mode button and ± compensation button simultaneously)
- Turn the Power switch OFF.

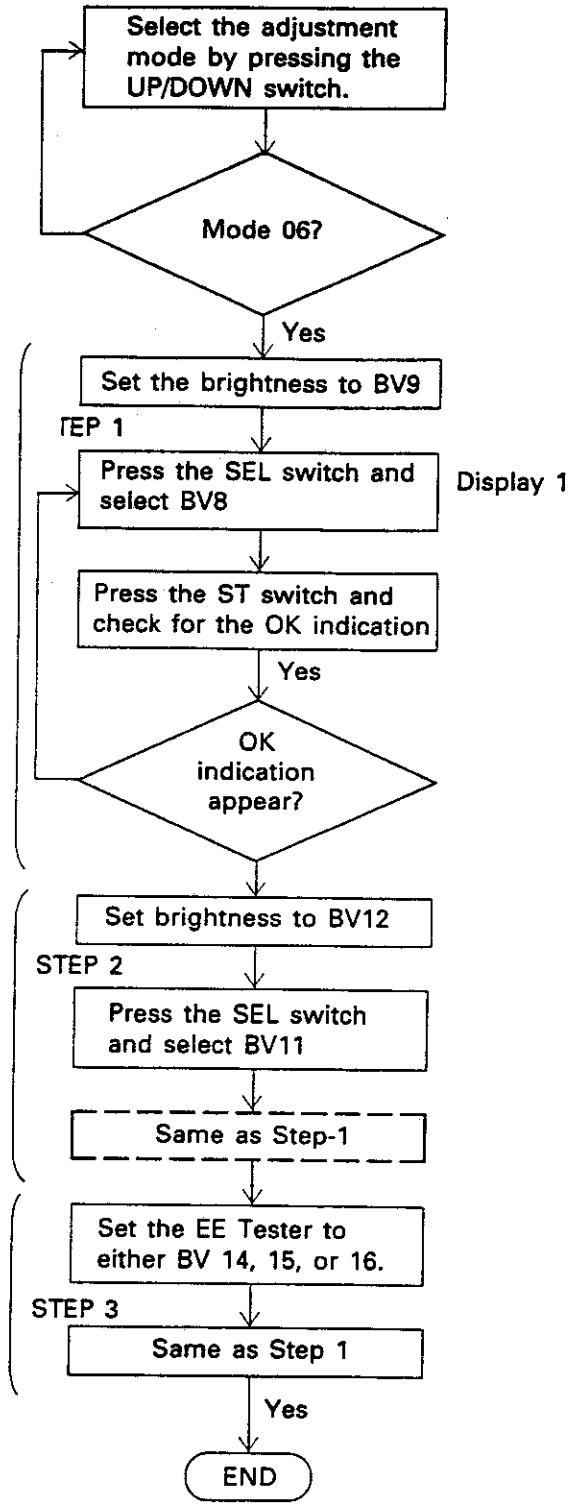
Shooting range

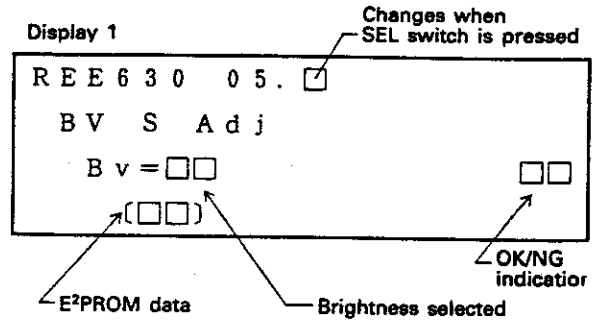
* Dimensions are given as guidelines.

Focal distance	Shooting distance (m)	Magnification	Photographed range (cm)
f = 35 mm	0.6	1/14	34 x 50
f = 120 mm	0.6	1/6	15 x 22

⑦ Metering Adjustment (Spot) ------- 05

◎ The same precautions for adjustment mode 05 apply; close the rear cover of the camera to shut out all light.

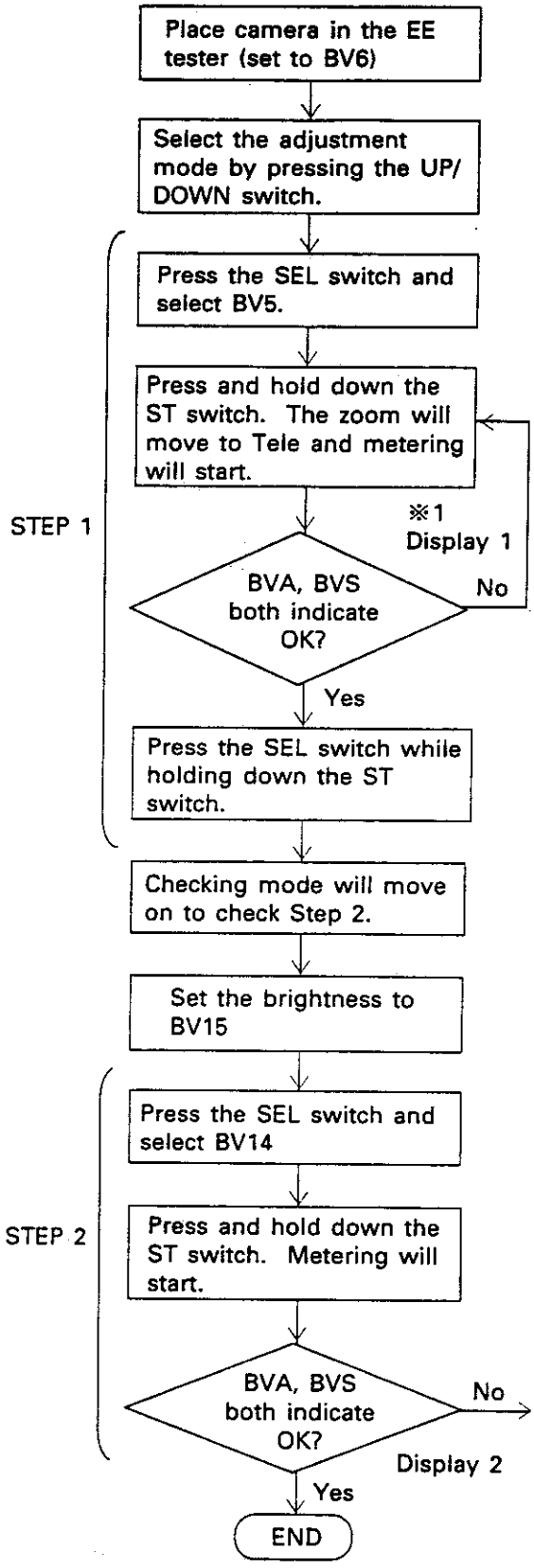

Select the adjustment mode by pressing the UP/DOWN switch.
Mode 06?
Yes
Set the brightness to BV9
TEP 1
Press the SEL switch and select BV8
Display 1
Press the ST switch and check for the OK indication
Yes
OK indication appear?
Set brightness to BV12
STEP 2
Press the SEL switch and select BV11
Same as Step-1
Set the EE Tester to either BV 14, 15, or 16.
STEP 3
Same as Step 1
Yes
END



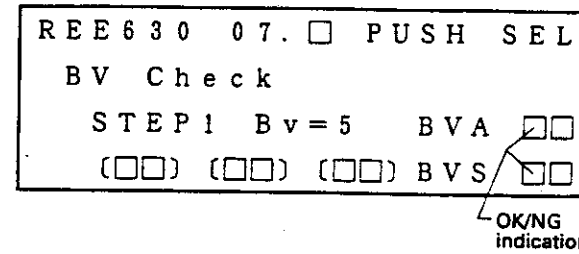
★ It is common for NG to appear so repeat the checking procedure a few times as explained in mode 04.

⑥ Checking the Metering Adjustment ------ 06

◎ This is the mode for checking the average metering and spot metering adjustments. Place the camera in the EF8000 and shut out all light.

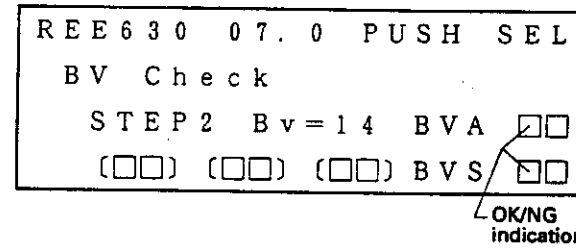

Place camera in the EE tester (set to BV6)
Select the adjustment mode by pressing the UP/ DOWN switch.
Press the SEL switch and select BV5.
Press and hold down the ST switch. The zoom will move to Tele and metering will start.
※1 Display 1
BVA, BVS both indicate OK?
No
Yes
Press the SEL switch while holding down the ST switch.
STEP 1
Checking mode will move on to check Step 2.
Set the brightness to BV15
Press the SEL switch and select BV14
Press and hold down the ST switch. Metering will start.
STEP 2
BVA, BVS both indicate OK?
No
Display 2
Yes
END

Display 1



※If BVA or BVS still indicate NG after pressing the ST switch several times, readjust modes 04 and 05.

Display 2



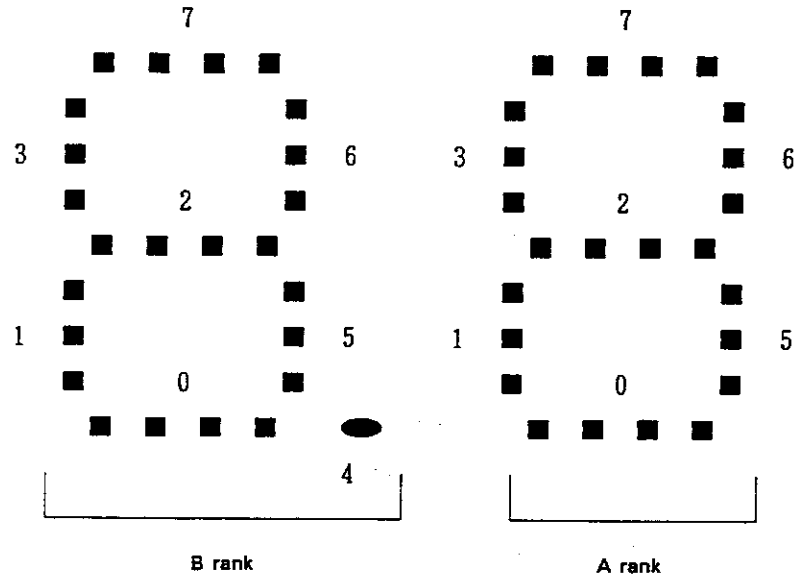
If OK does not appear after doing mode 06 two or three times, readjust modes 04 and 05.

E. REPAIR PROCEDURES

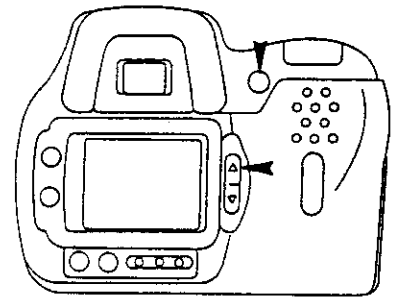
1. Repair mark (Damage data)

※ Errors are ranked by order of importance. Rank A errors will stop further operation and may require the use of CK-II to clear the error.

1. The damage can be checked in the LCD panel by pressing the SPOT button and the ▲ side of Shift switch (B) simultaneously. Each segment of the display correspond to a particular damage as shown below.



- Error display by on damage data segments
  - 0: Interface errors (A rank only)
  - 1: Not in use
  - 2: Flash light errors (B rank only)
  - 3: Zoom error
  - 4: EEPROM error
  - 5: AF lens error (B rank only)
  - 6: Not in use
  - 7: Mirror, shutter failures



* The "wrench mark" will not appear on this model.
* Segment 4 does not exist for A rank errors.

2. Causes for Repair Mark Indications and Expected Camera Behavior

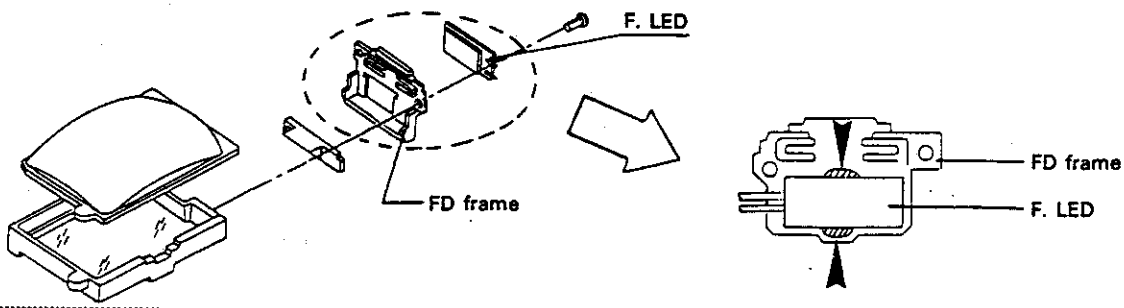
Damage Data	Rank	Cause	Expected Camera Operation
0	A	• If a communication error occurs between the CPU and DCMIC, the interface will attempt a retry. If the retry also fails, an interface error will occur.	• Camera will not operate at all, or operate completely out of order.
2	B	• Flash did not complete charging within 30 seconds.	• Built-in Flash charging malfunction • User can still conduct normal AE photography • User can still use an external mounted Flash (G40)
3	B	• When setting zoom barrel from retracted position to W-most end, the PI did not accept signal for more than 130 ms.	• Zooming will not function from the ZOOM UP/DOWN switches. • Zoom barrel will not retract when the POWER switch is turned OFF. • User can still conduct fixed focus point photography.
4	A	• Data written in EEPROM is not being read correctly when the POWER switch is turned ON.	• Camera will not operate at all.
	B	• Writing failure occurred twice in a row.	• A mode changes when the power switch is ON because the memory of modes or set values cannot be performed when the power switch is OFF. • If the POWER switch is turned OFF after taking the first shot of a double exposure photo, an unexpected double or triple exposure may occur because the display will either show an "S", "C", or an indication that the first frame has not be shot yet.- If the POWER switch is turned OFF while rewinding the film, the camera will not resume rewinding when the POWER switch is turned back ON. • The frame counter will keep resetting to a certain value every time the POWER switch is turned OFF. • The zoom memory will not function.

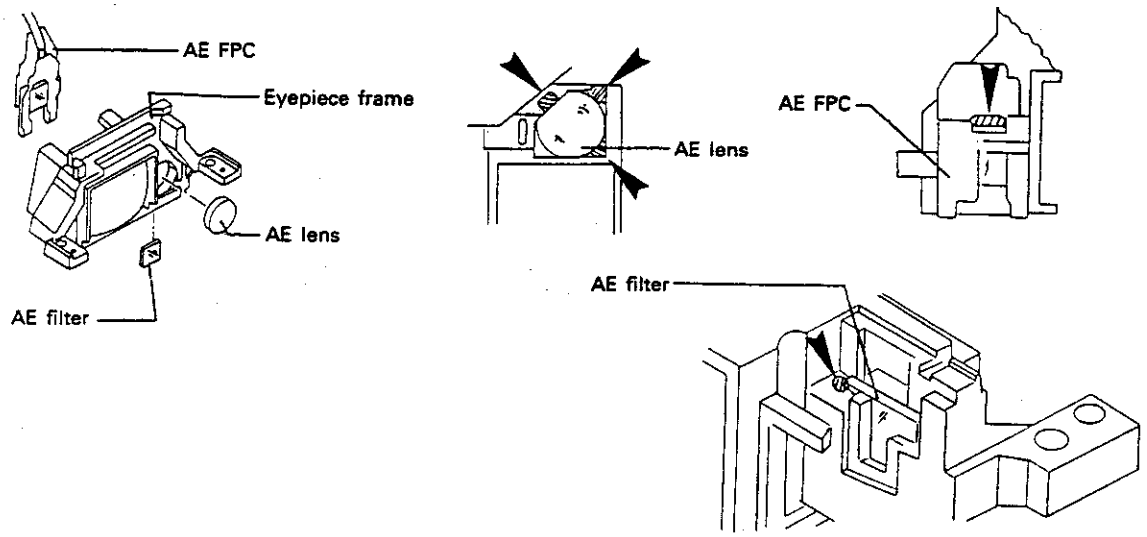
Damage Data	Rank	Cause	Expected Camera Operation
5	B	• The lens scan did not complete within the specified time. • The pulse counter reached an abnormal value.	• Either the AF lens will not operate, or the lens barrel will reach either end of its stroke without focusing on the subject. • The lens may lock in the AF mode because the AF function will not be able to focus on the subject. Should the function work, the data indicating the distance from the subject will not be reliable enough for the Flash AE and portrait auto zoom modes. • Shutter can still be released in the PF mode, but as in the case of the AF mode, the Flash AE and portrait auto zoom modes will be unreliable.
7	A	• Mirror down, or shutter charge failure. The SCsw did not come on after 500 ms since the MS motor started to move.	• The operation will lock up after registering the second release.
	B	• Aperture closing failure. While the aperture was trying to open, the aperture blades stopped on the fourth pulse after the AVOsw went OFF.	• Photograph using smallest aperture. Otherwise, the aperture will remain open and result in erroneous exposure.

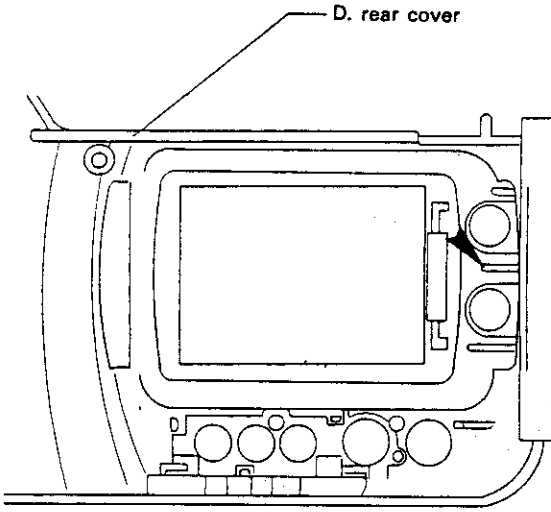
G. APPLICATION LIST OF GREASES AND CHEMICALS

I. ADHESIVE

1. Diabond as a substitute for Black Hamatite (OT1156)



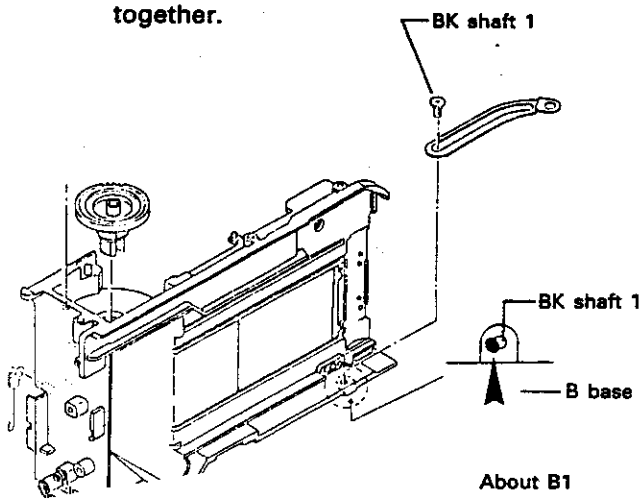




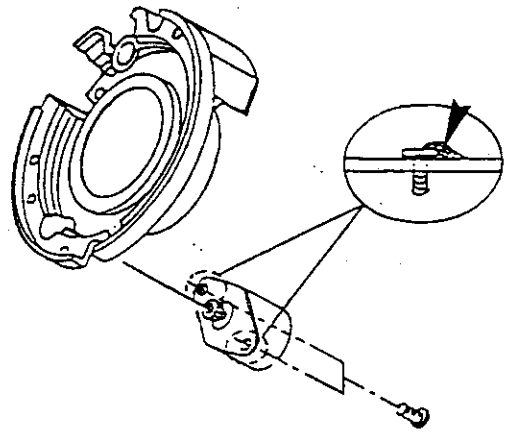
About B1 x 4

2. Three Bond 1401B (OT1262)

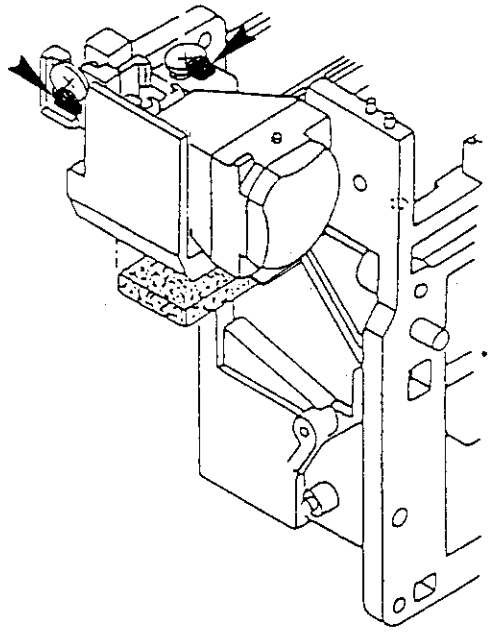
Apply adhesive to BK shaft 1 and B base and glue both members together.

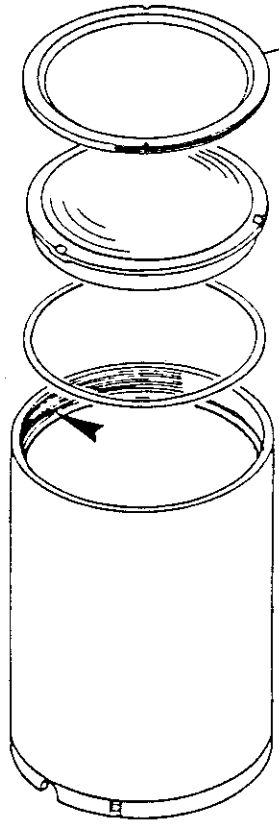


Apply adhesive at Top of screw about B1



About B1

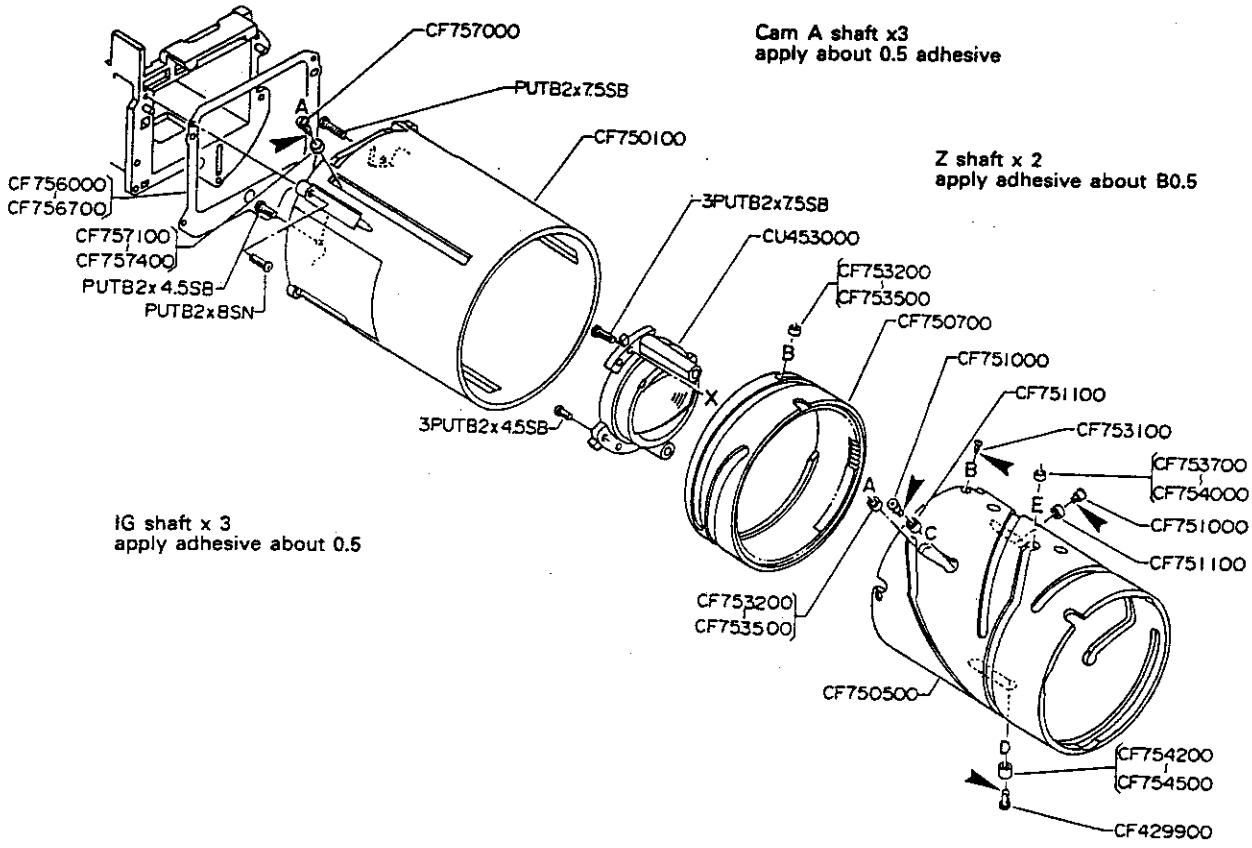




Apply adhesive to about one to two threads from the bottom of the barrel, size ϕ1 length: 20 mm to 25 mm

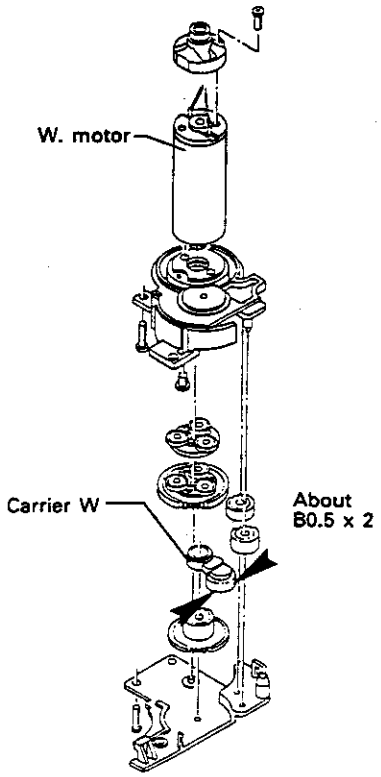
3. Permalok MM115 (OT1126)

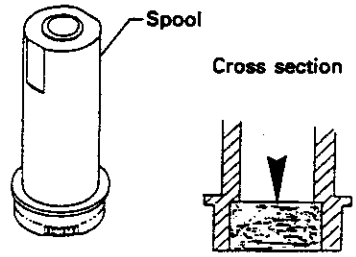
- A quantity of application is about two threads of a screw.



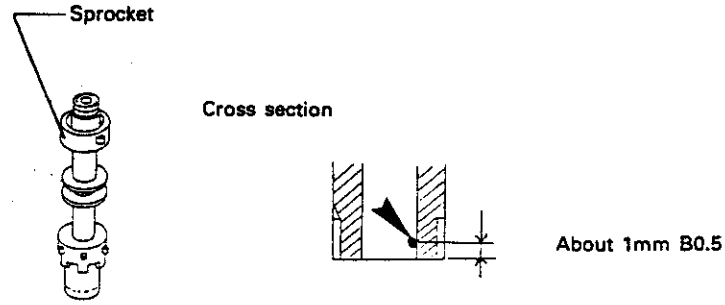
II. GREASE

1. FD-10 (OT1545)





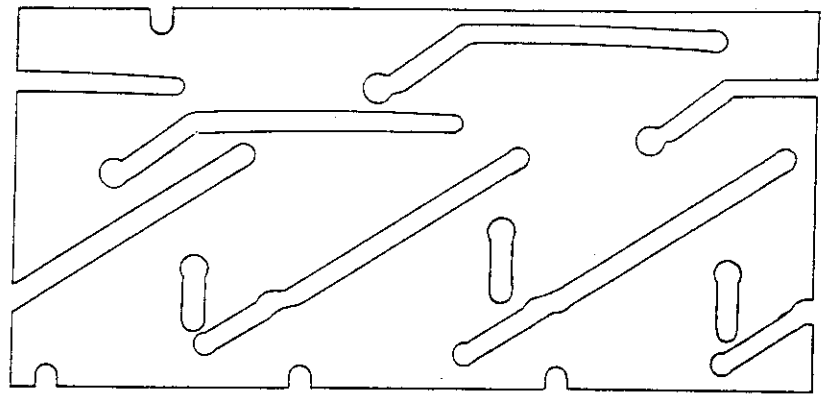
- Apply grease thinly and everly to the inside diameter (touching surface with the W base plate) of the spool.



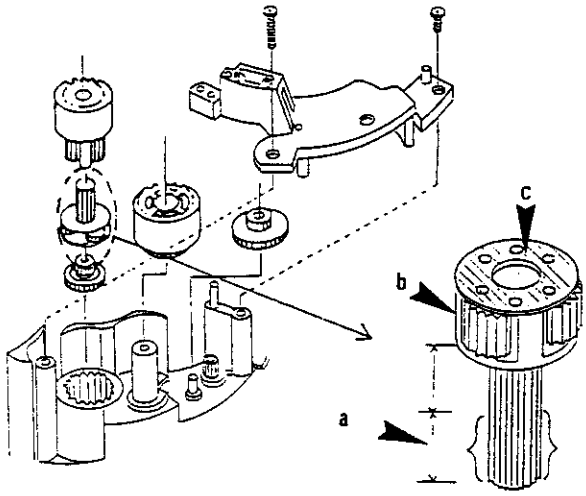
Cam ring A
(CF7505)

Development

- Apply to all grooves to produce a light white shiny surface.
  Do not allow grease to collect in one place.

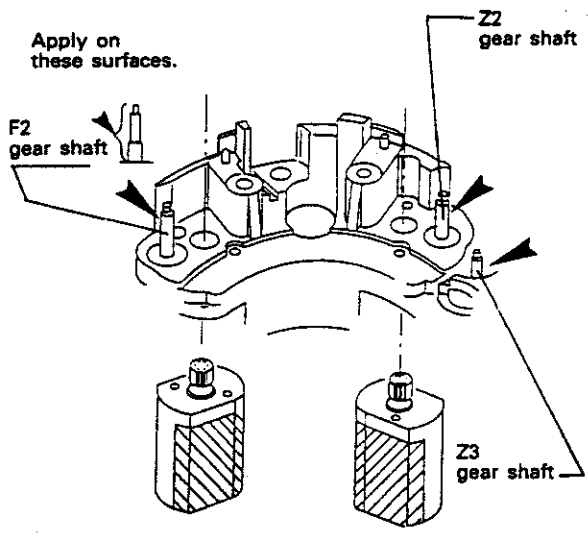


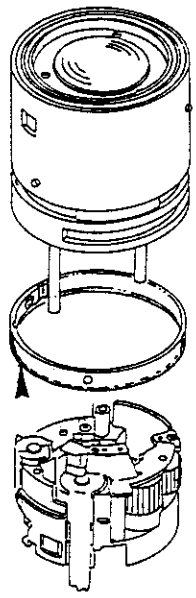
FD-10 (OT1545)



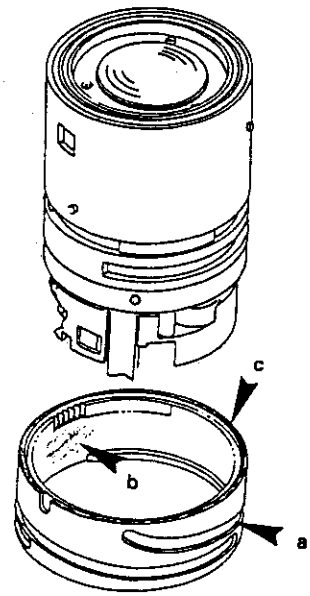
a. Apply to end of gears (x 2) About B2
b. Apply to gears (x 3)
c. Apply to shaded portion Apply enough to produce a white surface.

Apply enough to produce a light white shiny surface.





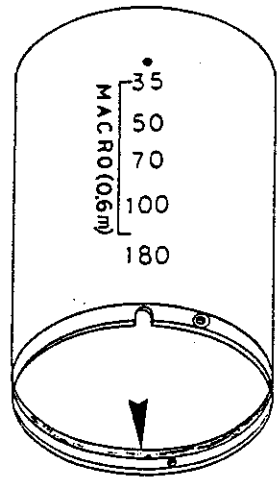
Apply to end on frame side of motor. Amount of application: Enough to produce white shiny surface (grease must not collect in one place)



a. Cam groove
b. All sliding surfaces inside barrel. (do not apply to gears)
c. Ends
Amount of application: Enough to produce white shiny surface (grease must not collect in one place)

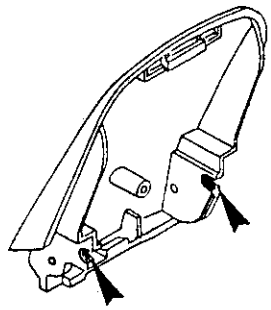
Continuous shooting mode	For continuous shooting or to use the AF continuously.
To set	Press and hold the Drive button while pressing theShift button (B or F) until 'CONT' appears in the LCD panel.
Continuous shooting	To shoot continuously, press the Release button all the way down and hold it there. • AF mode: Focusing and metering for each frame • PF mode: Metering for each frame
Continuous AF	When using the AF mode, AF will work continuously while holding the Release button at the first step (half way).
Winding speed	2 or more frames/sec (PF mode, 1/2000 sec (manual mode), new batteries, Neopan SS24EX)
Double exposure mode	Exposes two images on a single frame.
To set	Press and hold the Drive button while pressing the Shift button (B or F) until 'D.EXP' appears in the LCD panel.
Shooting	• When the first exposure ends, "D. EXP" will start flashing • The film is wound one frame after the second exposure ends *Exposure is controlled to the correct amount for both the first and second frames.
To cancel	• Automatically cancels after the second exposure. • Cannot be canceled after taking the first exposure * This mode cannot be canceled by turning the power off. (When the power comes back on, the frame will be waiting for the second exposure)
Power focus mode	For manual powered focusing.
To set	Press the PF button and confirm the flashing "PF" indicator on the LCD panel
Focusing	Focus through the viewfinder while holding down the zoom button. Low speed at first step of Zoom button, fast at second. * Zoom cannot be used in the PF mode. * In the PF mode, the AE lock will not engage even if the Release button is pressed halfway.
Exposure compensation	To change the standard exposure of the AE to a different exposure level. Use for shooting white or black subjects.
To compensate	• Press and hold the ± compensation button while pressing the Shift button (B or F). Each press changes the EV in increments of 1/3. Maximum compensation value is ±4 EV. Reset the mode. (i.e., press the Mode button and ± compensation button simultaneously)
To confirm	• If exposure is compensated, "+" or "–" will light up on the LCD panel and in the viewfinder. • The amount of compensation will appear in the number of frames display while the ± compensation buttons are being pressed.
To cancel	• Press and hold the ± compensation button while pressing the Shift button (B or F) until the compensation reads 0. • Reset the mode. (i.e., press the Mode button and ± compensation button simultaneously) * This mode cannot be canceled by turning the power off. * Compensation cannot be used in the manual mode.

FD-10 (OT1545)



- Apply grease to the entire periphery of the inner diameter under the arrow shown in the figure.Apply enough to produce a moderately white shiny surface.

2. CE-14C (OT2207)

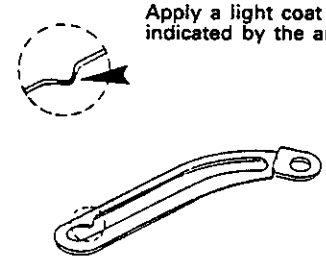


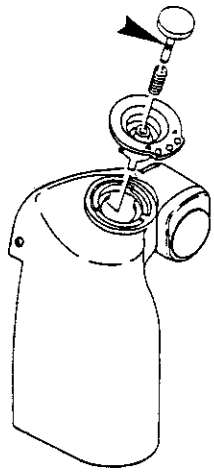
ST case (CF7461)

Apply to points indicated by arrows.

BK arm (CF5427)

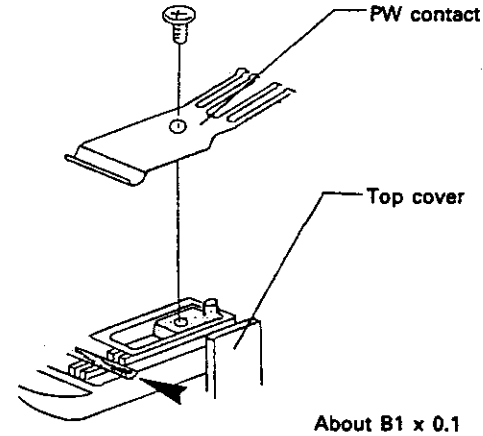
Apply a light coat to the point indicated by the arrow.



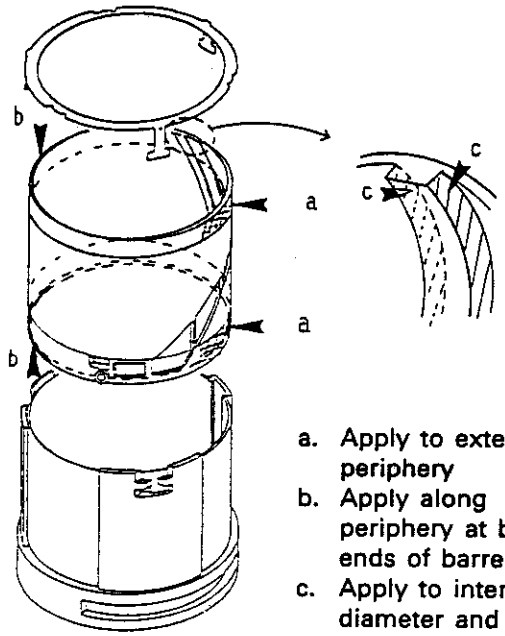


Release button (CF7755)

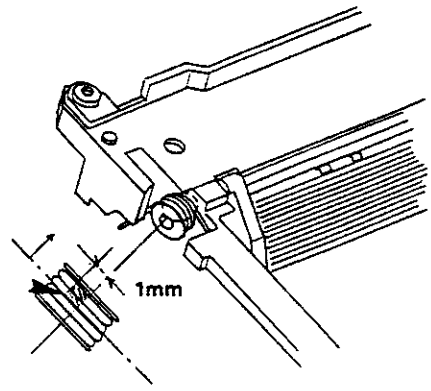
Apply about B1 at about the center of the shaft.



3. G611 (OT1762)

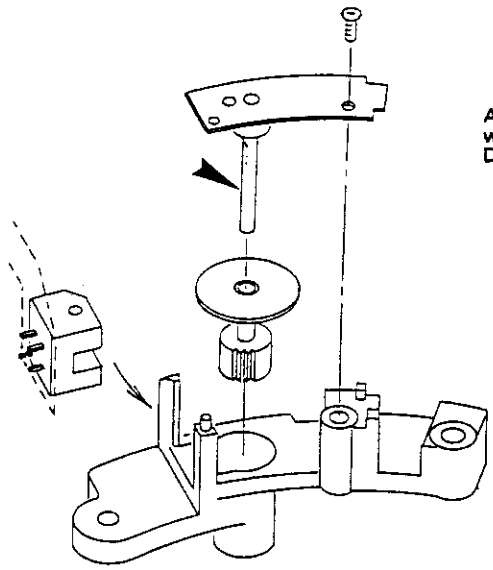


a. Apply to external periphery
b. Apply along periphery at both ends of barrel
c. Apply to internal diameter and both sides of cam



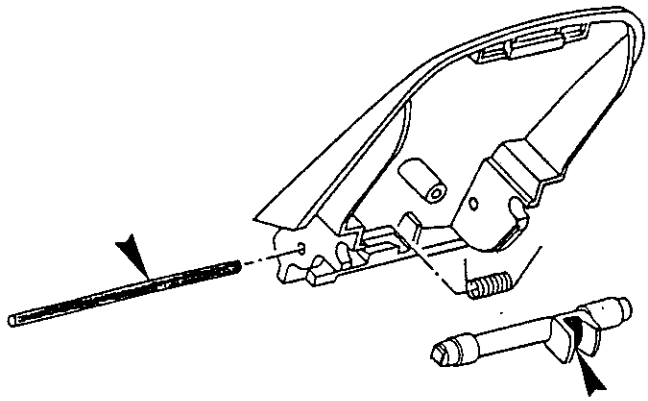
Apply about B 0.5 Range: shaded portion in the figure above. (Apply a bead about 1 mm wide in the indicated direction from the center of the MD spring)
Only apply to spring, do not let grease contact other parts.

4. G42 (OT1763)



Apply enough to produce a moderately white shiny surface.
Do not allow to collect in one place.

5. Molycat (OT1760)

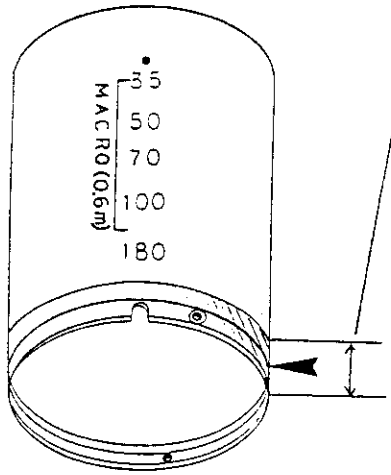


Apply about B2 to cover the entire surface of the cam.

Apply about B2 to cover the entire surface.

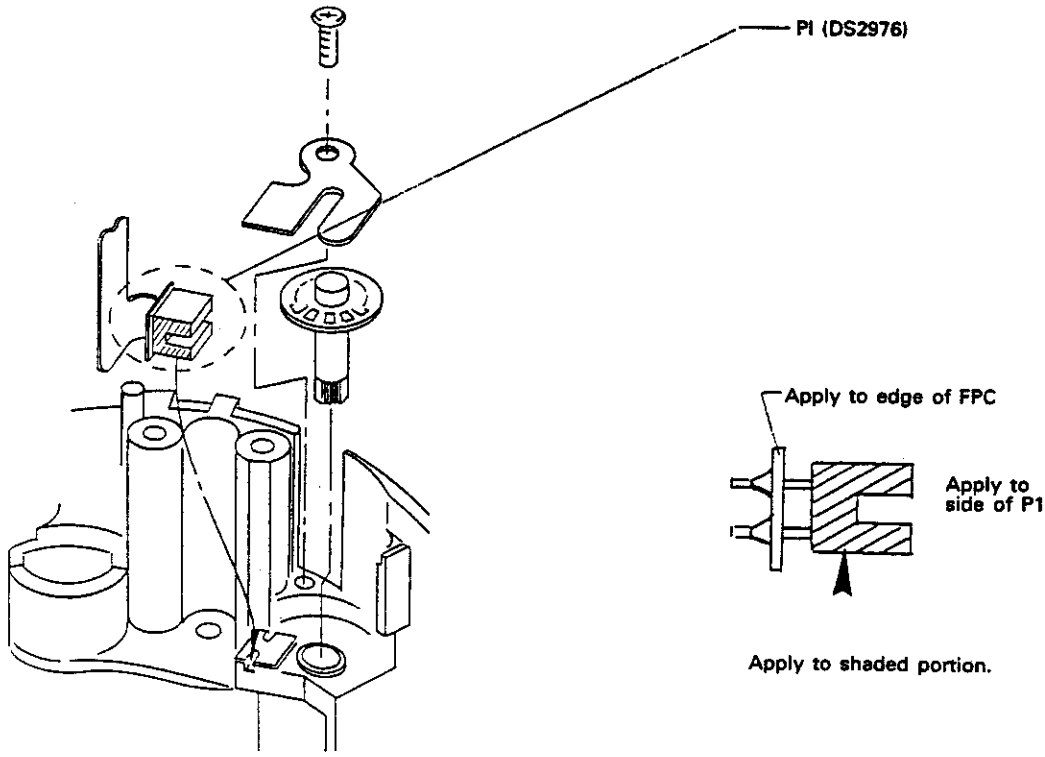
III. OTHERS

1. Oilbarrier FC721 (OT1164)



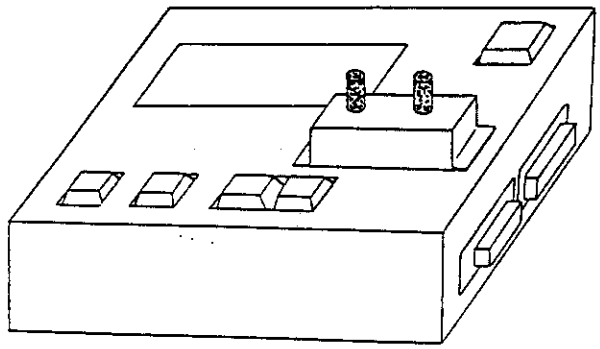
Apply to periphery within the shaded portion. Width of application should be about 10mm to 15 mm wide.

2. Flat black paint XF-1 (OT1750)

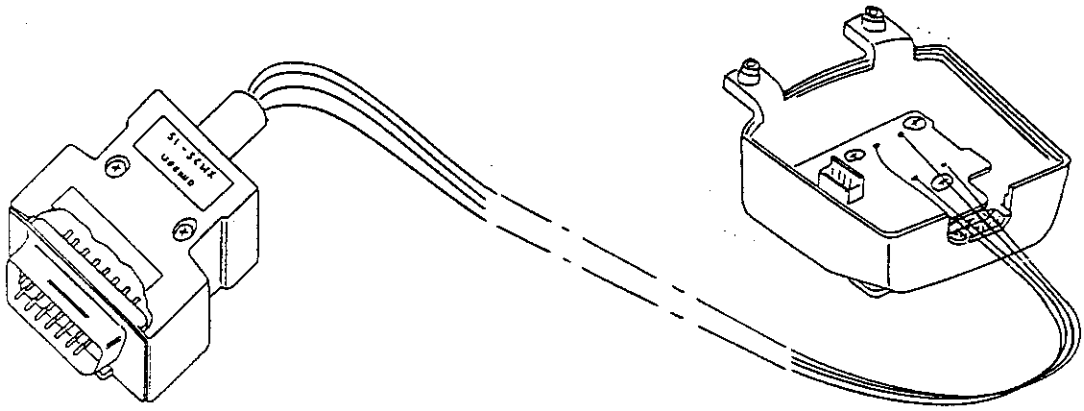


H. SPECIAL JIGS AND TOOLS

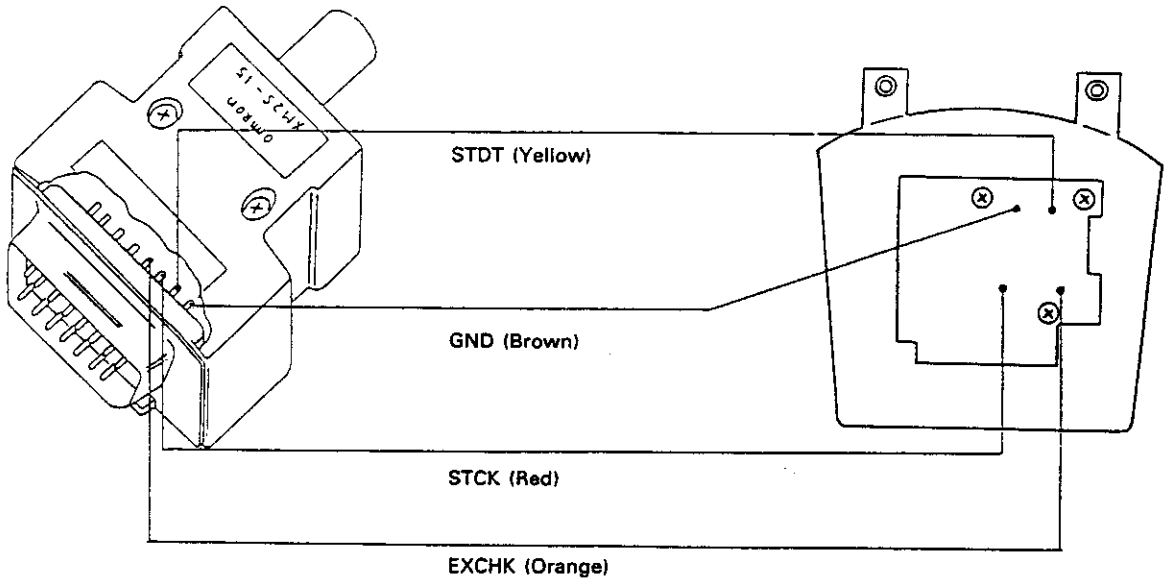
1. KC0179 System Checker CK-IIA



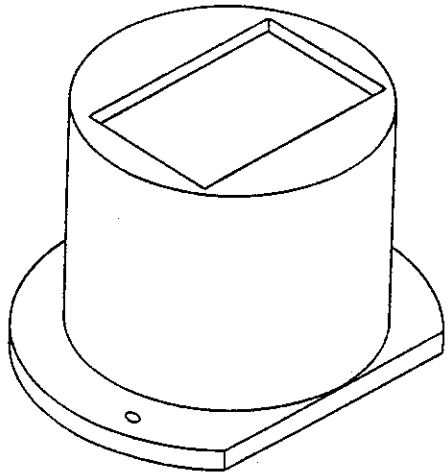
2. KCCU3869 Connector cord



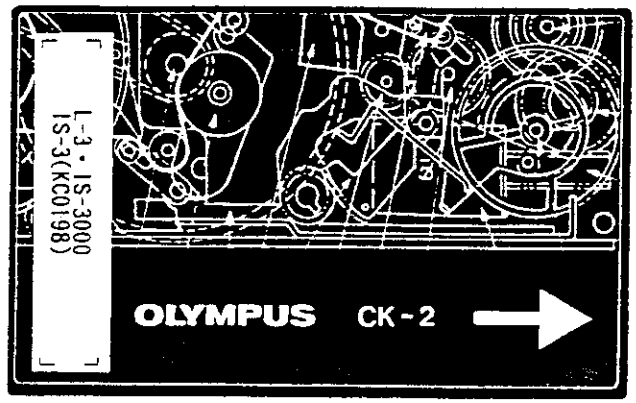
Wiring diagram



3. KC0197 L3FC jig



4. KC0198 IC Card



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I. DESCRIPTION OF MECHANISM

I. THEORY OF OPERATION OF MECHANICAL COMPONENTS

1. Primary structure

(1) Finder light path (Fig. 1)

Taking Lens group → 1 M (half mirror) → Flennel lens → condenser lens (1-T) → 2M → AF unit (64 x 2 rows SPD sensors) → Triangular prism (1-P) → Roof mirror (an real image is inverted → Mirror (5M) → 2-T Lens → Eyepiece lens (3-0, removable for adjusting diopter)

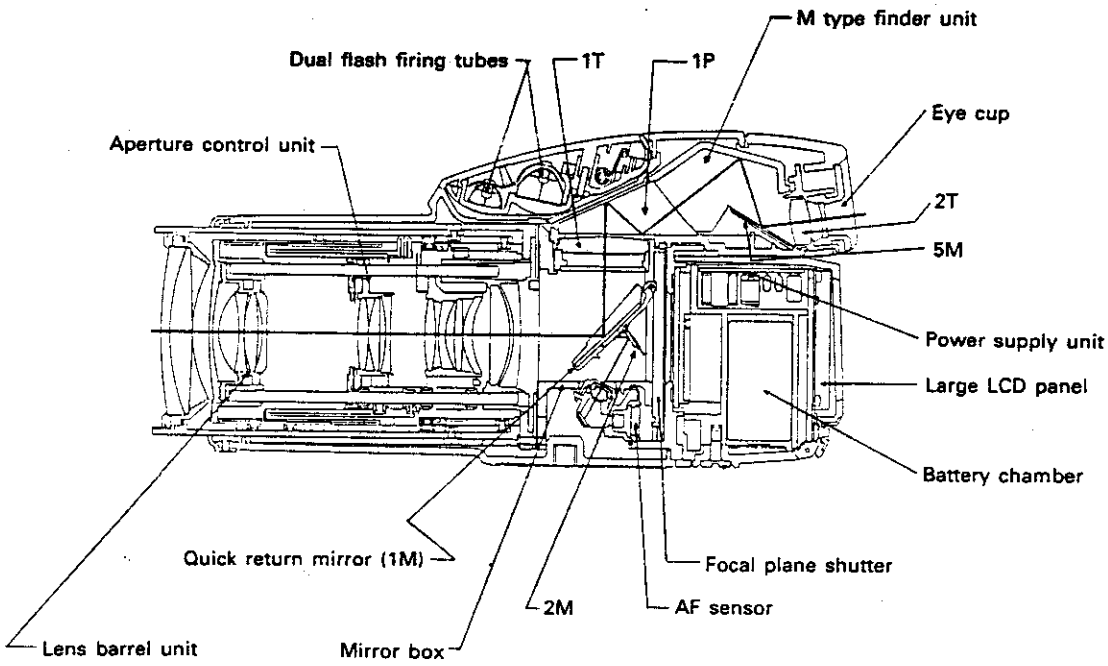


Fig. 1

(2) Drive system

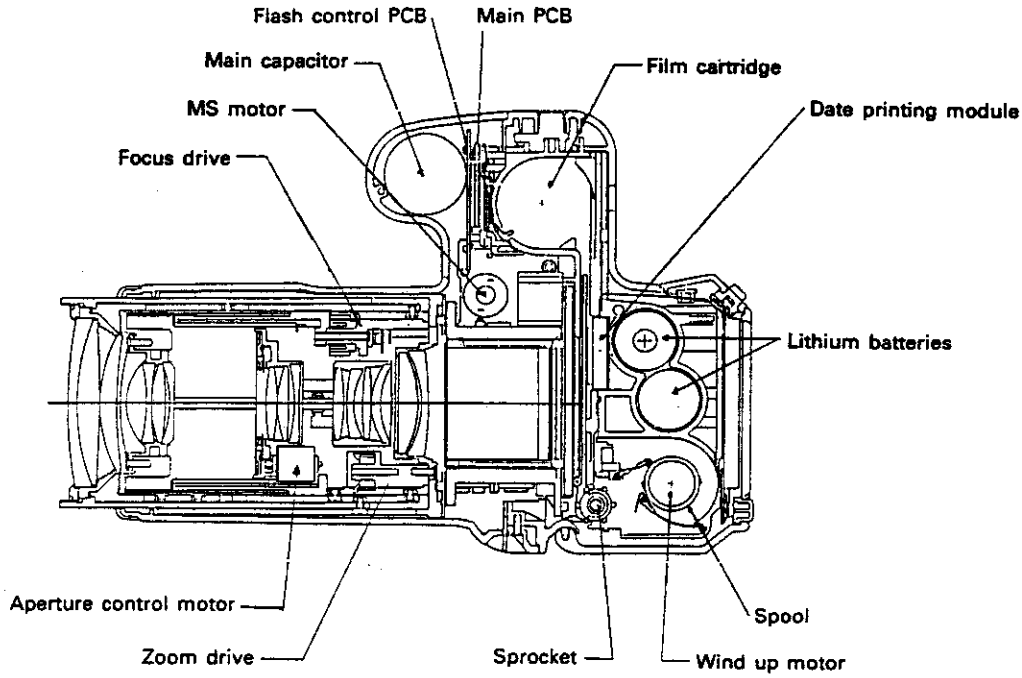


Fig. 2

① Film winding operation
The W motor on the other side of the rear cover winds up the film

◎ Auto loading

1) Sprocket drive
At first, the W motor rotates in reverse direction and carrier W transmits this rotation to the sprocket so that in turn, the sprocket advances the film into the spool chamber. The spool rotates freely. (Fig. 3)

2) Spool drive
The P1 gear rotates in conjunction with the sprocket to drive photo interrupter W-P1. W-P1, in turn, detects the number of pulses from the advancing film and at the prescribed number, reverses the rotating direction of the W motor. The W motor now rotates forward. At the same time, the carrier W moves from the sprocket side to the spool side. The sprocket is now able to rotate freely while the spool winds the film up to the first frame. (Fig. 4)

◎ Once auto loading is done, the spool drive winds up the film.

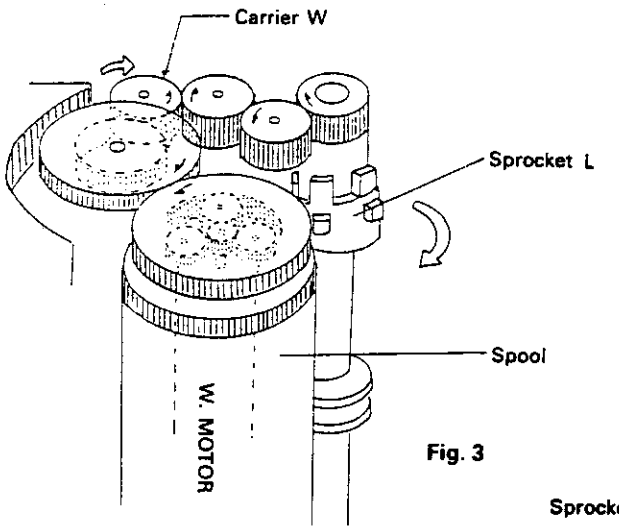


Fig. 3

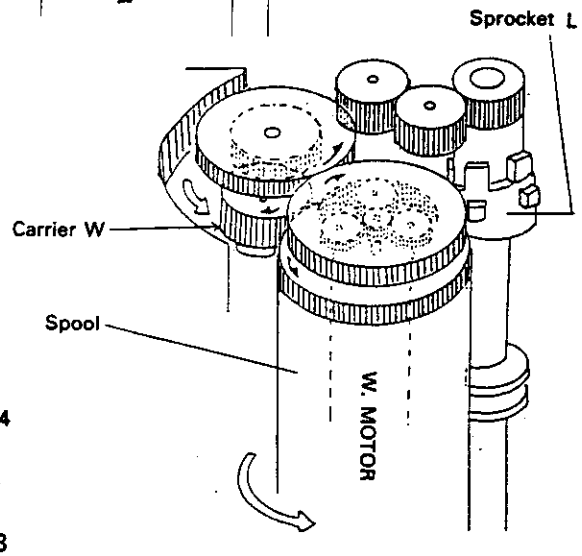


Fig. 4

② Mirror operation, Shutter charge, Rewinding (Fig. 5)
- The three operations given above are performed with just one motor.
- When rewinding, the MS motor rotates in the reverse direction to rewind the film. The W motor reverses abruptly to free the spool from its associated gear so that the spool can turn freely. (The spool is also freed when the rear cover is opened.)
- Drive cam timing chart (Fig. 6)

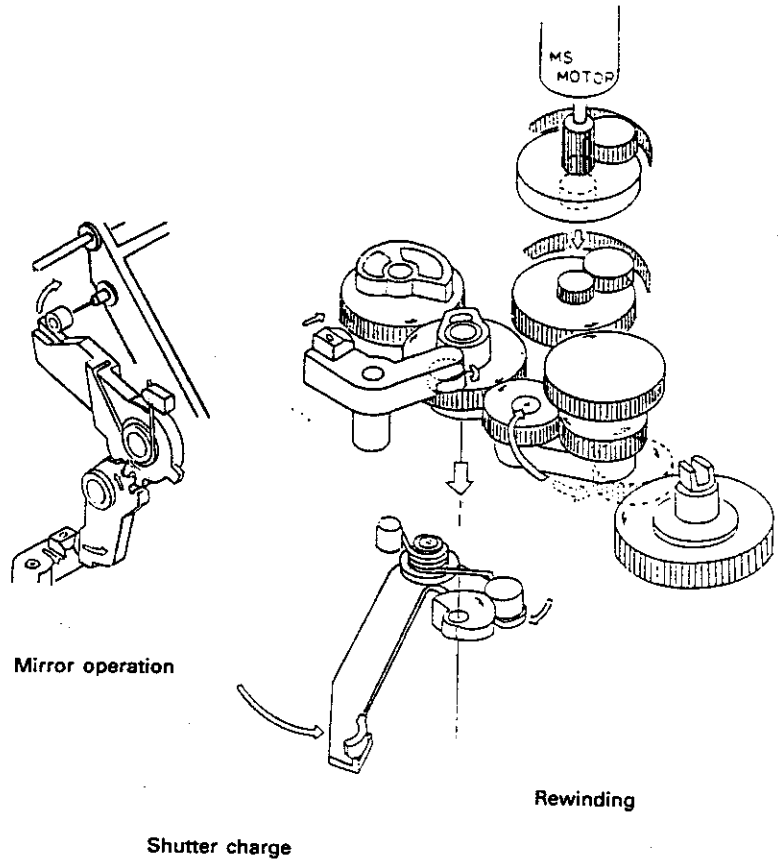


Fig. 5

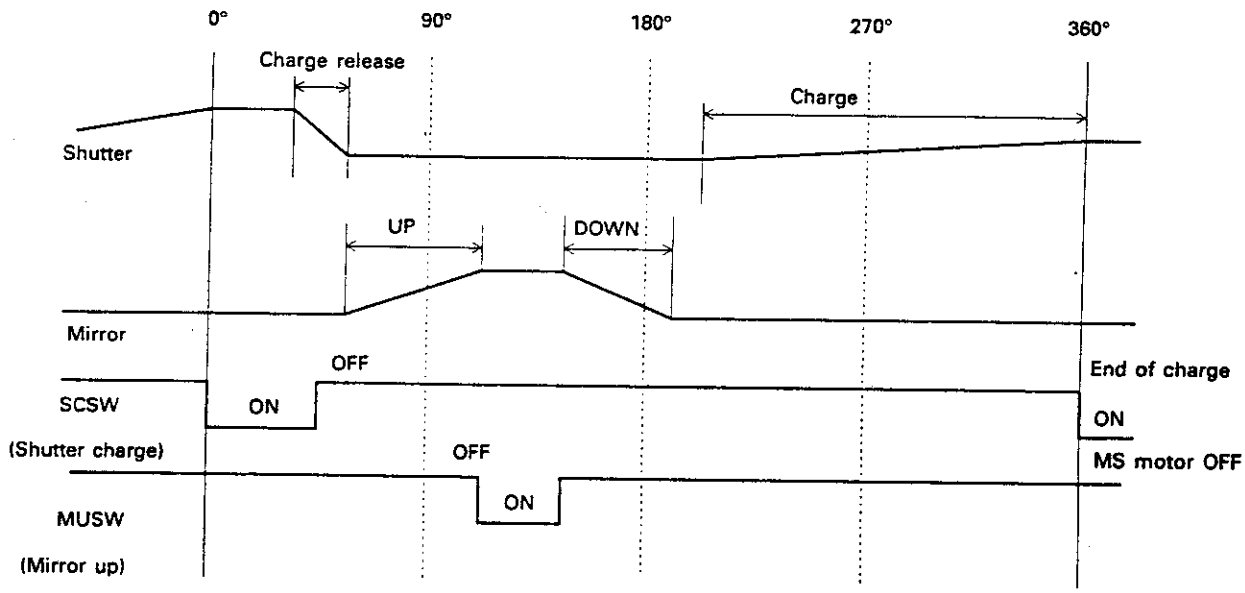


Fig. 6

Flash mode

Exposure mode / Flash mode	Program (P)	Aperture priority (A) Shutter priority (S)	Manual (M)
AUTO	• Automatic firing under 1/100 sec (Fixed at 1/100) • No firing at or above 1/100 sec • Low luminance limiter speeds = 1/100 sec • Guide number variable firing on both Tele and Wide sides.		
AUTO-S	• Pre-flash followed by full flash (to reduce red-eye) • The rest is the same as AUTO		
FULL-IN	• Fires unconditionally • SS is fixed at 1/100 sec		
Manual flash mode			• Full firing on wide side under 1/100 sec. *Wide super FP firing over 1/125 sec.

* In the program mode, the firing quantity is corrected by -1 EV when shooting against light.
* Quantity of light per pre-flash: Approximate Guide number is 0.4 (pre-flash frequency 24 Hz)
* In the night mode, the flash can be used at slow synchro speeds of 1/100 sec or less.
※In the Portrait mode wide super FP and tele super FP are automatically switched depending on the focusing distance and shutter speed 1/125 sec.
* GNo. of Super FP Firing charges according to the shutter speed. Except for is-3DLX.

Mode selection

• Press and hold the Flash button while pressing the Shift button (B or F).

	Exposure mode		
	Program	*Aperture-priority	Manual
LCD panel display	AUTO ↕ AUTO-S ↕ FILL-IN	AUTO ↕ AUTO-S	

*Other modes include Shutter Priority, Portrait, Night scene, and Sports Scenery.
• In the sports mode, the AUTO-S mode is equivalent to the AUTO firing mode.
• If in the FILL-IN mode, the flash mode will automatically reset to AUTO.

Over exposure warning

In the FILL-IN mode, a high luminance level outside the range of proper exposure control will be indicated by flashing the shutter\ speed and aperture value displays at 1/100 sec and 22, respectively.

• Aperture operation

The x5 zoom requires an aperture unit with a wide moving range. However, the REE640 does not facilitate the use of a wide moving range and therefore uses a stepping motor to achieve the same effect.

The ST (stepping) motor (CU5452) controls the AV ring (CF7651) directly without the use of a PI. The amount of rotation is controlled by counting inside the motor.

The PI on the AV FPC (CF7660) is normally OFF (when aperture is open). When the aperture starts to close, the AV ring turns in the indicated direction and turns PI ON. The ST motor starts counting at this time, and when the motor has rotated the number prescribed by the CPU (aperture value), the motor stops.

After the shutter has been closed, the ST motor reverses its rotating direction and stops where PI turns off, (aperture in open condition again). (Fig. 7)

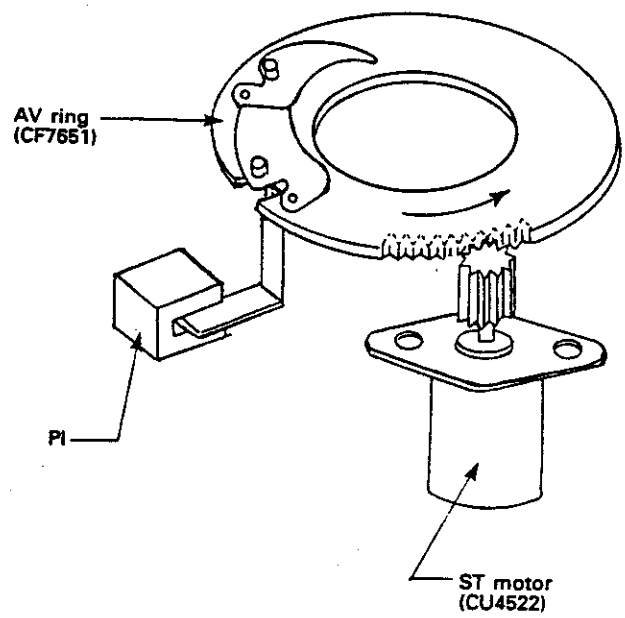
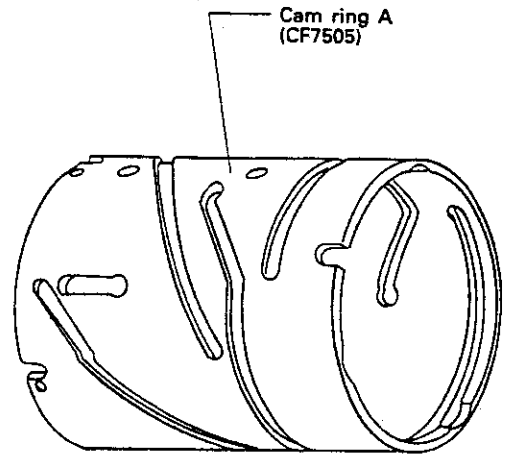


Fig. 7

2. **Vari-focal lens**

The x5 zoom lens on the REE630/631 is a vari-focal lens. This lens corrects focusing errors mechanically by using a non-linear cam. (Fig. 8)

The distance between focusing groups 1 and 2 varies while zooming. Focus is maintained while zooming by moving lens groups 1, 2, 3, and 4 along the same cam.



Non linear cam

Fig. 8

3. **2nd curtain synchro (follow synchro)**

   If external flash G40 is used when the mode of the camera is auto or program, 2nd curtain synchro shooting can be performed. The 2nd curtain synchro is a mechanism that fires the flash immediately before the 2nd curtain travels, as compared with the normal 1st curtain synchro (the flash fires immediately after the 1st curtain of the shutter travels). The 2nd curtain synchro is particularly effective when a moving subject is shot with a slow shutter. An afterimage is connected to the subject illuminated by the light of the flash behind the direction of progress so that a natural reflection can be obtained.

4. **Super FP firing (not included on is-3DLX for North American markets)**

   Super FP firing kicks in automatically in the manual or portrait modes for shutter speeds over 1/100. (built-in flash only)
   Super FP firing is effective for synchro shooting backlit scenes outdoors. Daylight synchro shots can be taken easily with the same natural lighting effects that professionals achieve using silver reflection boards. The resulting picture gives more detail to the subject (in portrait mode) or suppresses the brightness of the flash to a moderate level.

5. **Zoom position detection groove**
   The zoom encoder used on models REE620/621, and REE640/641 is not used on this model. The tab on cam ring B (CF7506) and SBPI (DS2977) are used to detect the absolute position of the zoom lens, (i.e., retracted, W end, T end). ZMPI (DS2960) detects the zoom position. (Fig. 10)

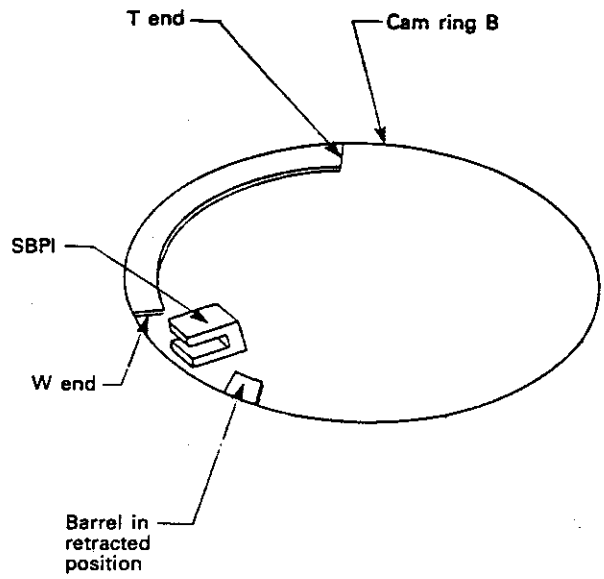
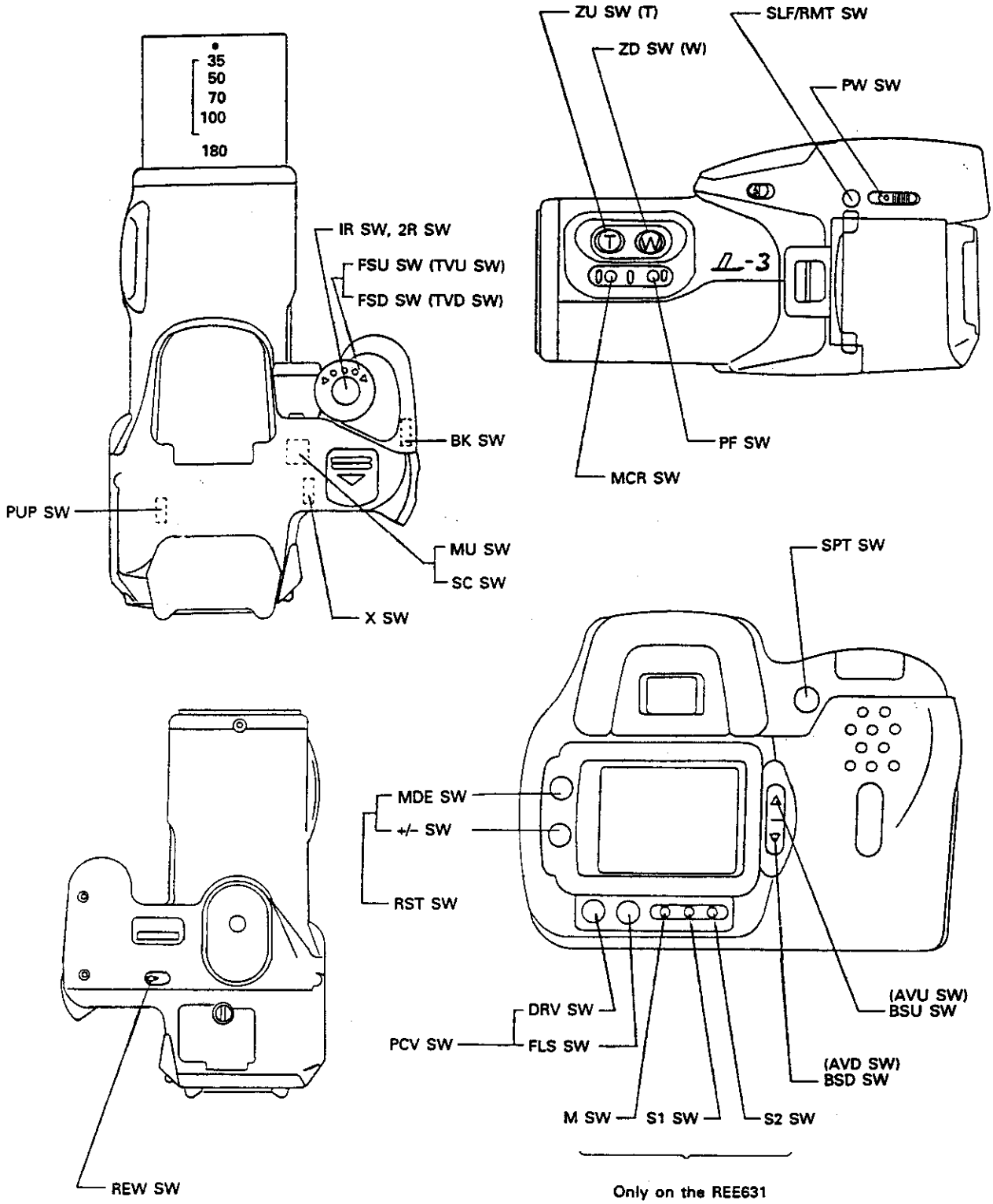


Fig. 10

6. Switch Layout



7. Names and Functions of Each Switch

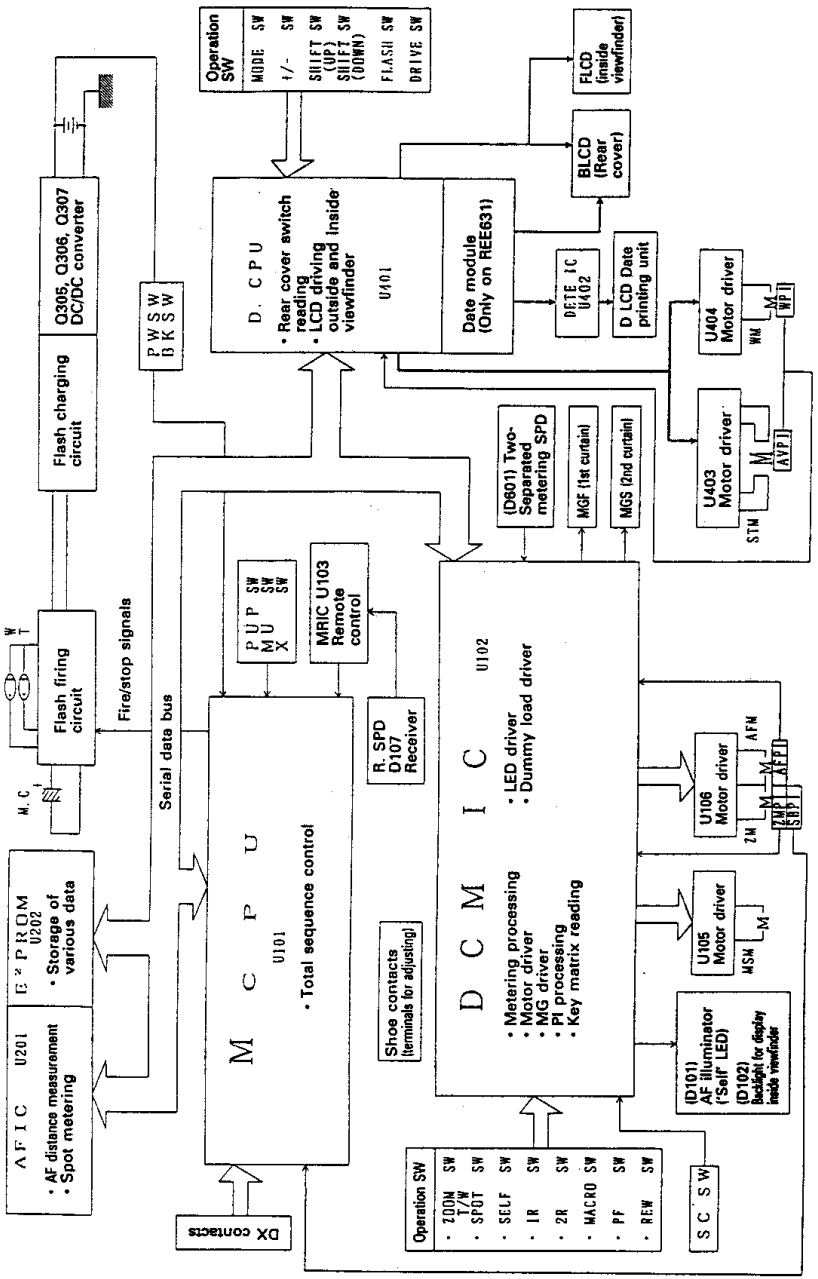
Name of Switch	Function
PW SW (POWER)	Power ON/OFF
1R SW (1ST RELEASE)	1st release
2R SW (2ND RELEASE)	2nd release
ZU SW (ZOOM UP)	Zoom up (tele, 2 speeds)
ZD SW (ZOOM DOWN)	Zoom down (wide, 2 speeds)
REW SW (REWIND)	Rewind switch
RST SW (RESET)	Reset (resets settings to standard mode, battery check)
FSU SW (FRONT SHIFT UP)	Mode selector (mode, flash, drive, +/–) Shift up
TVU SW (TV SHIFT UP)	TV shift up (fast)
FSD SW (FRONT SHIFT DOWN)	Mode selector (mode, flash, drive, +/–) Shift down
TVD SW (TV SHIFT DOWN)	TV shift down (slow)
BSU SW (BACK SHIFT UP)	Mode selector (mode, flash, drive, +/–)
AVU SW (AV SHIFT UP)	Shift up AV shift up (close aperture)
BSD SW (BACK SHIFT DOWN)	Mode selector (mode, flash, drive, +/–)
AVD SW (AV SHIFT DOWN)	Shift down AV shift down (opens aperture)
SP SW (SPOT)	Spot metering
SLF/RMT SW (SELF/REMOTE)	Self time/ remote control switch
PF SW (POWER FOCUS)	Power focus selector switch
MCR SW (MACRO)	Super macro (closest range: approx. 60 cm)
MDE SW (MODE)	Exposure mode (P,A,S,M, night, landscape, portrait, sports)
DRV SW (DRIVE)	Drive (SINGLE, CONT, D-EXP)
FLS SW (FLASH)	Flash photography mode (AUTO, AUTO-S, FILL-IN)
+/– SW (+/– COMPENSATION)	Exposure compensation (±4.0 EV)
M SW, S1 SW, S2 SW } (Only on REE631)	Date mode selector, Date set position selector, Date adjustment } (Only on REE631)
Name of sensors	
BK SW (BACK COVER)	Rear cover closed (closed: OFF)
PUP SW (POP UP)	Flash popped up (up: ON)
MU SW (MIRROR UP)	Mirror up (up complete: ON)
X SW (X CONTACT)	Flash firing start
SC SW (SHUTTER CHARGE)	

Photointerrupter, motor, magnet

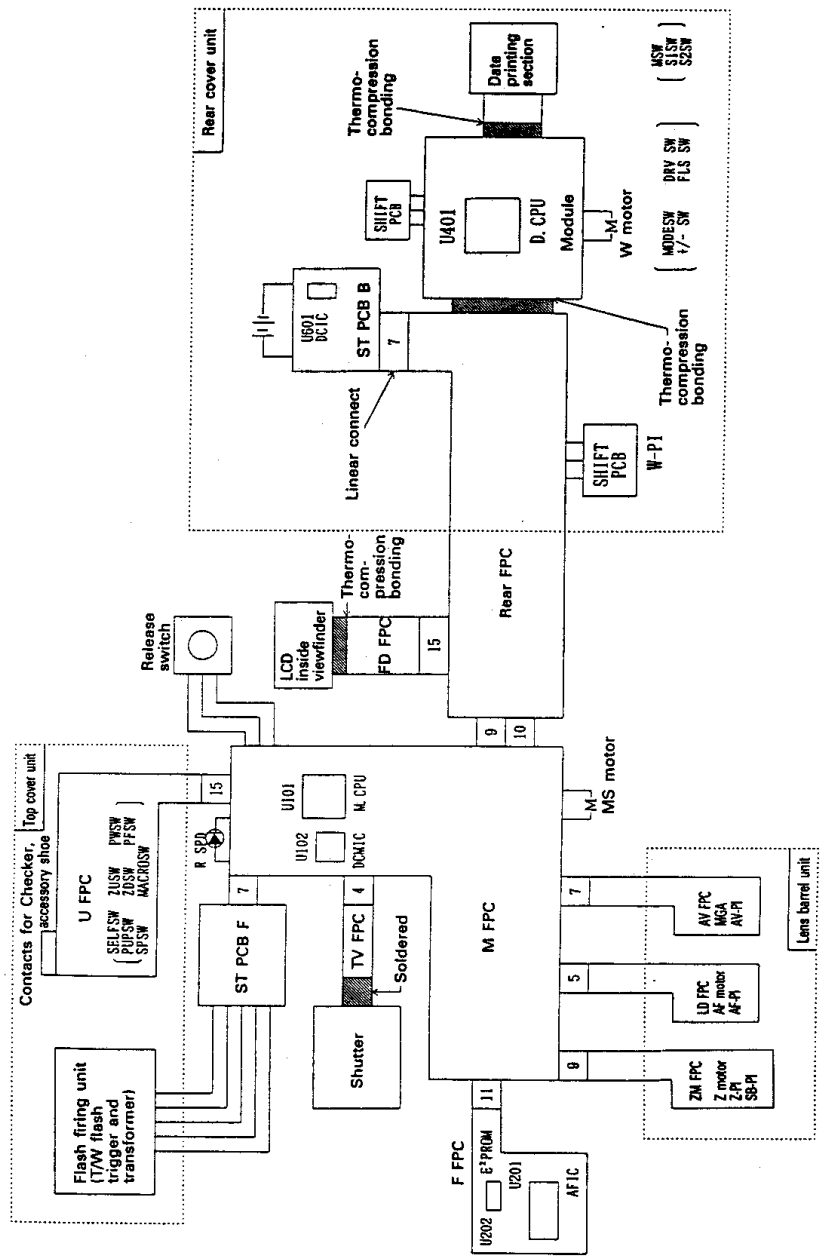
Names	Functions	Names	Functions
W-PI	Film progression detection	Z motor	Zoom lens drive
AV-PI	Aperture opening detection	MS motor	Mirror control, shutter charge, rewinding
AF-PI	Lens movement detection	W motor	Wind-up
ZM-PI	Zoom lens position detection	MGF	1st curtain control
SB-PI	Zoom absolute position detection	MGS	2st curtain control
AV motor	Aperture drive (step motor)		
AF motor	AF lens drive		

II. ELECTRIC CIRCUIT

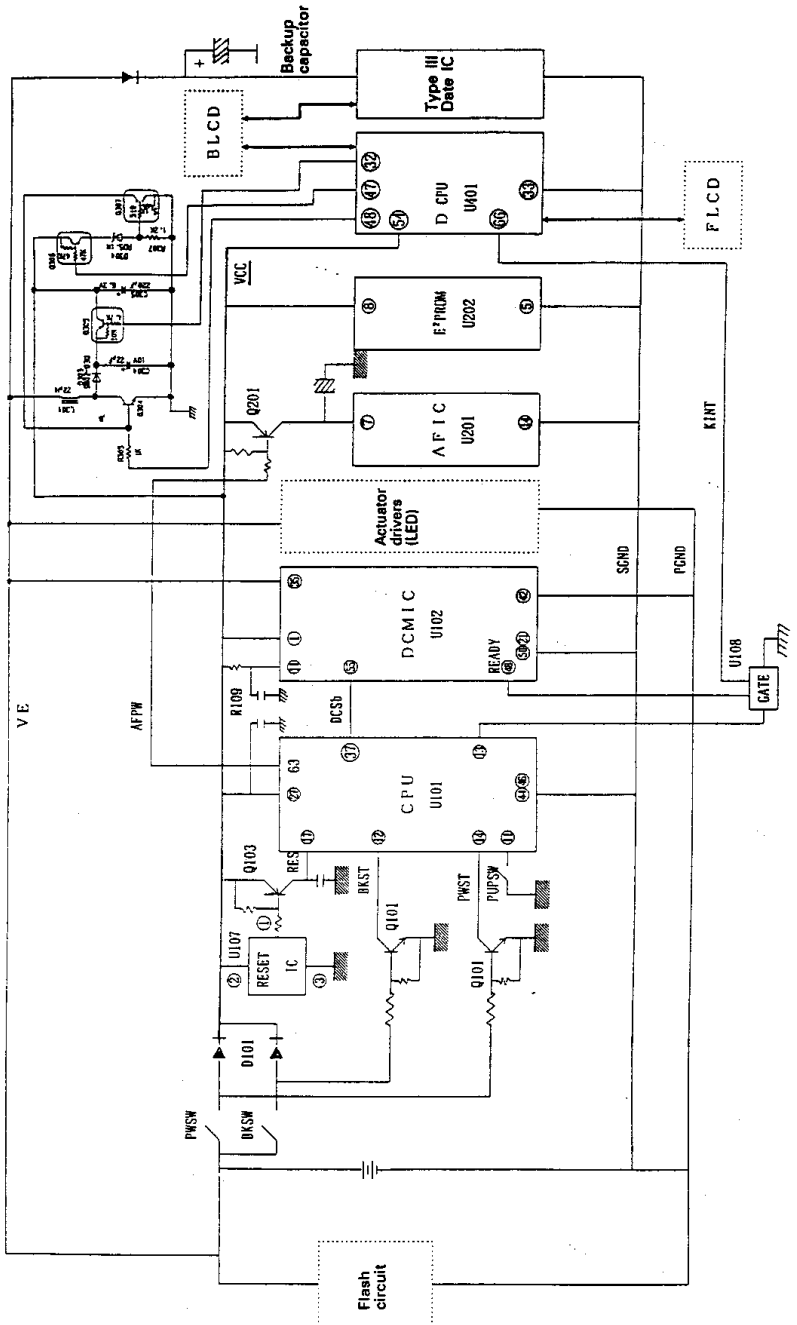
1. Block Diagram



2. PCB Connection Diagram



3. Power System Diagram



(1) Timing of power start-up (VCC active)

Starting timing	Reason for starting
PW switch ON	For normal sequence
PW switch OFF	To retract lens barrel
BK switch ON (Rear cover open)	For releasing the gear and set the spool free

※Approximately 400 to 700 μA is being consumed while waiting in the standby mode with the PW switch ON. The lithium battery will only last about 4 to 6 months in this condition.

※CPU interrupts are not serviced when the BK switch is moved from ON to OFF (open to close), or when the PUP switch is moved from ON to OFF (up to down). Therefore, it will take approximately 12 times longer (or 5 min) than usual to move to the standby mode when the BK switch is ON, or the PUP switch is ON. Once in the standby mode, the power will not restart by switching BK or PUP from ON to OFF.

(2) Timing of standby mode relase

① When any one of the 11 key switches on the body (all of which must be OFF) change from OFF to ON (READY signal)

② When any one of of the 6 key switches on the rear cover (all of which must be OFF) change from OFF to ON (KINT signal)

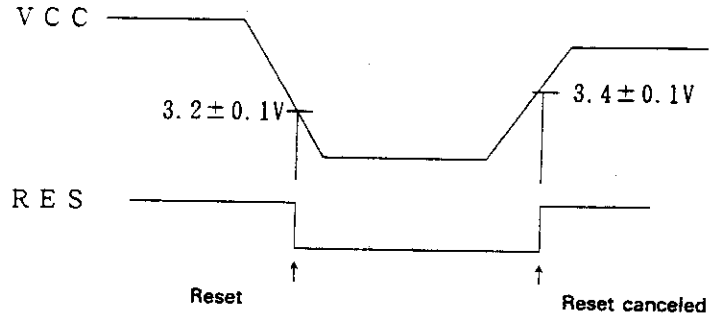
③ When the PW switch is turned oFF so that the lens barrel can be retracted (PWST signal)

④ When the BK switch is turned ON so that gears can be released (BKST signal)

⑤ When the PUP switch is turned ON so that the flash can be charged after it is detected in the UP position (PUPSW signal).

(3) CPU reset

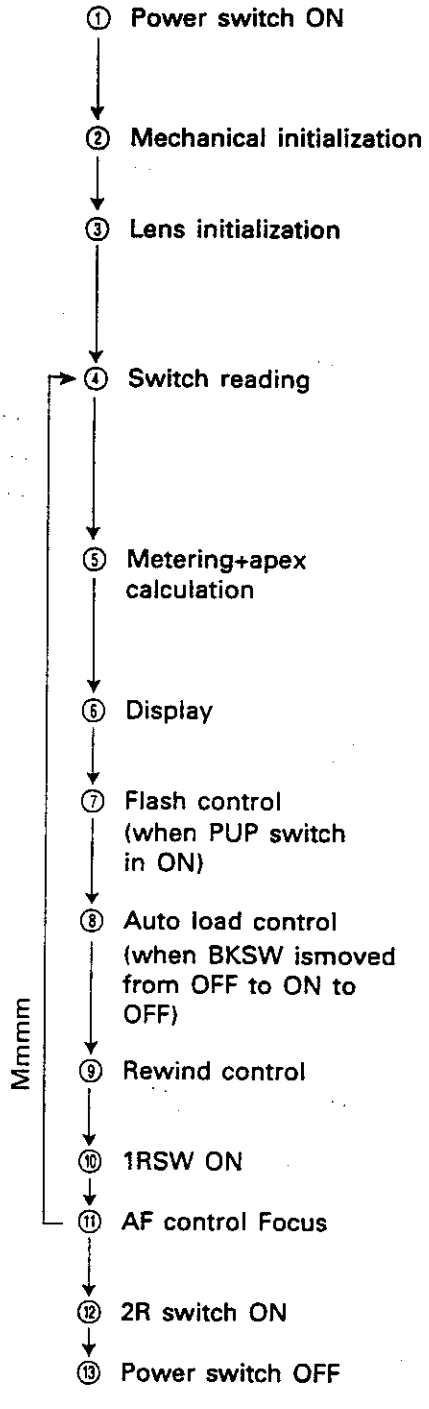
If the power of a VCC line is disconnected (Battery contact chattering reset the CPU by the VCC-dependent reset circuit to prevent overrunning



(4) Battery check

The batteries are checked prior to motor operation, or when the RST switch is turned ON. The check works by A/D converting the VE when AV stepping motor turns ON.

4. Main Operating Sequence


① Power switch ON
② Mechanical initialization
③ Lens initialization
④ Switch reading
⑤ Metering+apex calculation
⑥ Display
⑦ Flash control (when PUP switch in ON)
⑧ Auto load control (when BKSW ismoved from OFF to ON to OFF)
⑨ Rewind control
⑩ 1RSW ON
⑪ AF control Focus
⑫ 2R switch ON
⑬ Power switch OFF
Mmmm

'Hi' pulse generated by reset IC (U107) and Q103 is sent to CPU (U101) ⑰ to initialize the RAM and I/O.
Data communication of DC/DC startup to D.CPU.

Initial reset of shutter mechanism when MS motor comes ON. If rewinding is in progress, rewinding is resumed.

Z motor comes ON and moves lens from retracted position of zoom encoder to W end. AF-PI selection, and focus is set to ∞ position from stopper position when the AF motor comes ON.

Read in of switch settings in matrix of DCMIC, condition of switch (rear cover unit) of D. CPU (U401), the PW SW, BK SW, and PUP SW, and the DX code.

↓

Set operating modes.

SPD output from DCMIC is A/D converted and used to calculate BV value.

↓

TV and AV values output in accordance to metering mode.

Liquid crystal display (date communication in the TV. AV and operation mode to the D. CPU

Communication to start the flash charging circuit to the DCMIC.

Load film, W-PI selection, W motor comes ON and sets film to initial position.

Film rewinding operation, W-PI select, MS motor comes ON in reverse and starts rewinding.

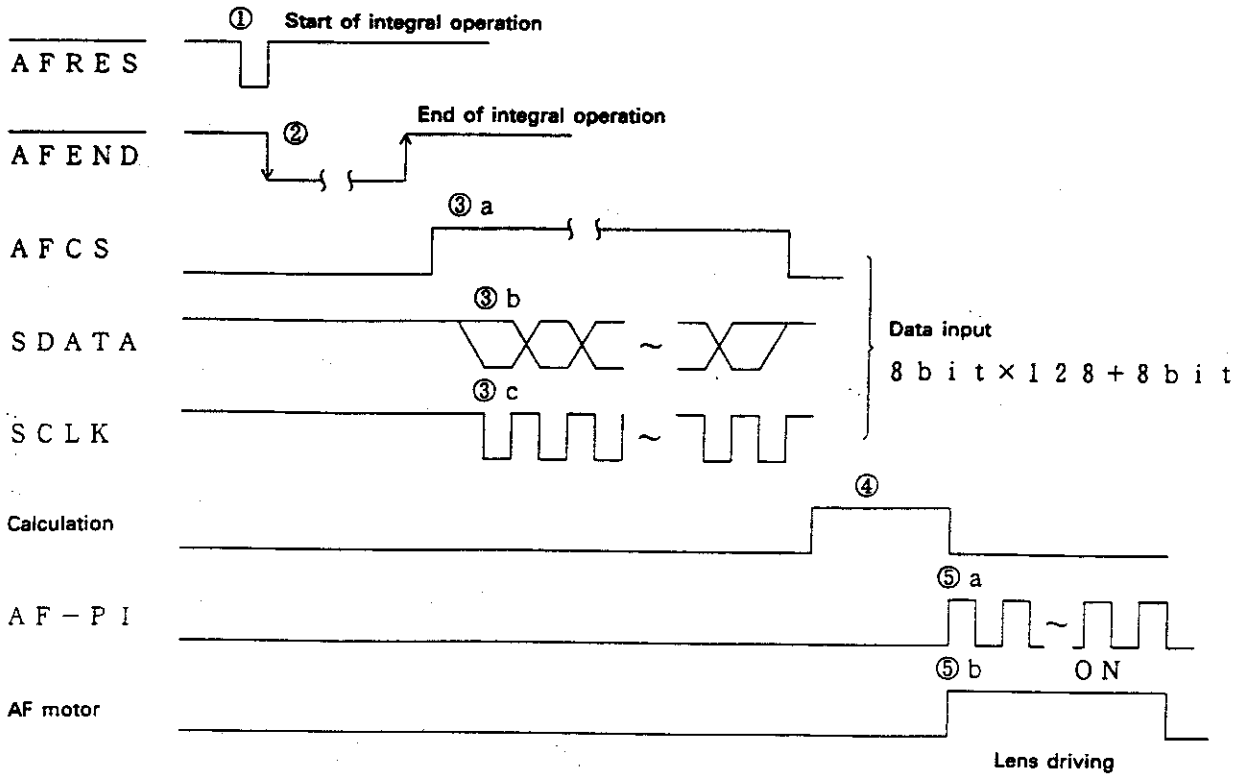
Read matrix switch from DCMIC.

Integral operation of AF sensor → distance measurement → lens control

Read matrix switch from DCMIC. Film exposure.

Writing operation to E²PROM. At the same time, Z motor comes ON and retracts lens. Z motor goes off when SB-PI detects end of lens retract.

5. AF sequence



① The CPU outputs a 'Lo' pulse to the AFRES to start the integral operation of the AF distance measuring circuit.

② The AF distance measuring circuit latches AFEND at 'Lo'. When the integral operation is done, AFEND moves to 'Hi' to notify the CPU that the integral operation has finished. During the integral operation, the CPU reads the switches, performs metering, and processes the output to the display.

③ a, b and c
When the CPU detects the completion of the integral operation, it outputs a serial clock to the distance measuring circuit and inputs the 8 bit x 128 sensor data, plus another 8 bits of sensitivity data.

④ The CPU calculates a quantity of defocus with in put sensor date and the number of required pulses by lens driving. The CPU calculates the VB value by the integral time in a spot metering mode.

⑤ a and b
The PI output is selected to AF - PI and the AF motor is moved to the number of calculated pulses. If the amount of defocus is within standards, the AF circuit will register the subject to be in focus and subsequently stop the lens driving.

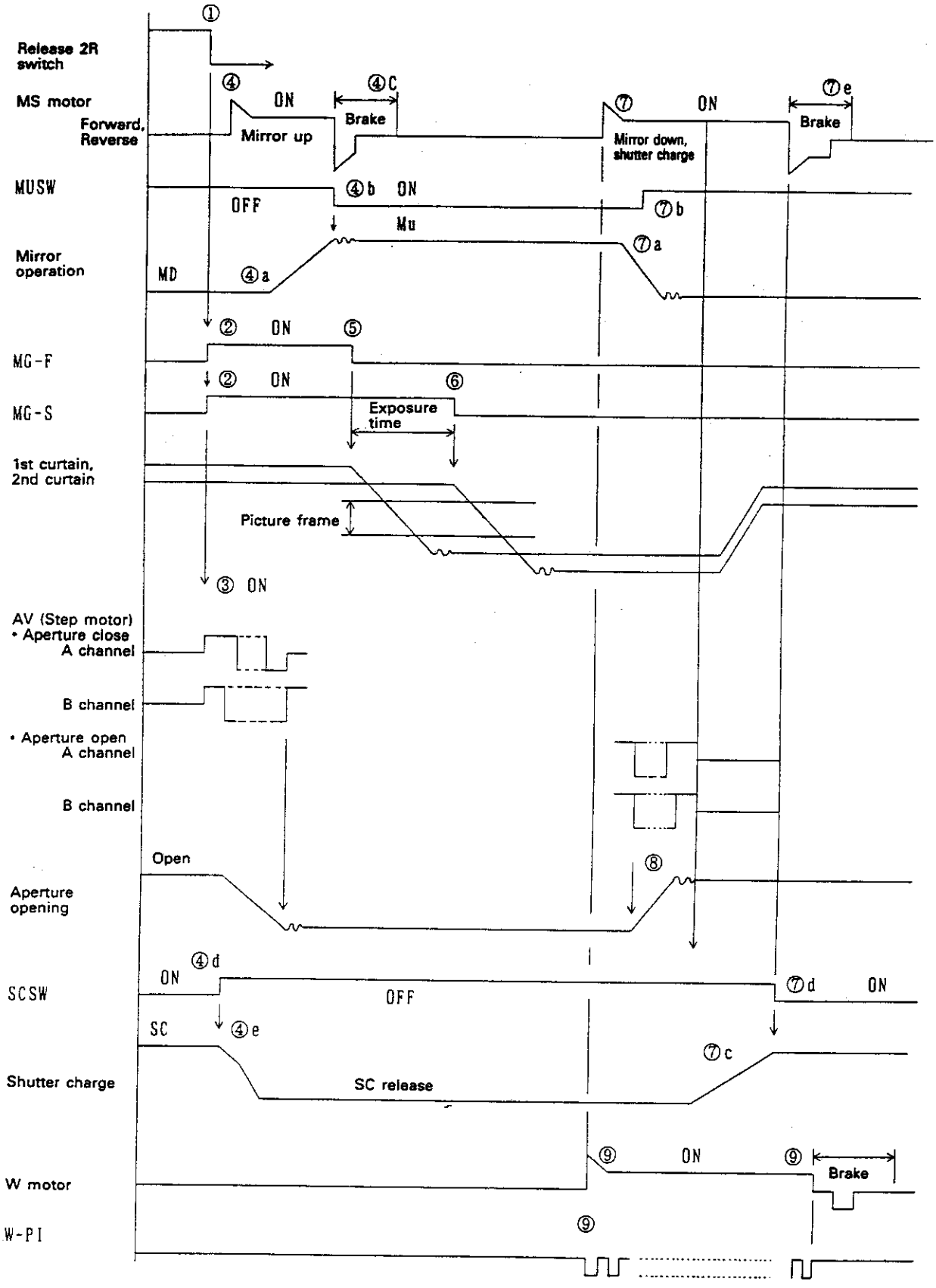
IV. Mode combinations

	Exposure mode				Focus mode						Drive mode								Flash mode		
	Program	Aperture priority	Shutter priority	Manual	AF	PF	Sports mode	Portrait mode	Scenery mode	Night mode	Single	Continuous	D. EXP	Zoom macro mode	Spot metering	Self/Remote	+/– compensation	Zooming	AUTO	AUTO-S	FILL-IN
Program					○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Aperture priority					○	○	×	×	×	×	○	○	○	○	○	○	○	○	○	○	×
Shutter priority					○	○	×	×	×	×	○	○	○	○	○	○	○	○	○	○	×
Manual					○	○	×	×	×	×	○	○	○	○	○	○	×	○	×	×	×
AF	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
PF	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○	×	○	○	○
Sports mode	○	×	×	×	○	○					○	*10	*4	○	*1	*2	○	○	○	*9	×
Portrait mode	○	×	×	×	○	○					○	○	○	○	○	○	○	○	○	○	×
Scenery mode	○	×	×	×	○	○					○	○	○	○	○	○	○	○	○	○	×
Night mode	○	×	×	×	○	○					○	○	○	○	×	○	○	○	○	○	×
Single	○	○	○	○	○	○	○	○	○	○				○	○	○	○	○	○	○	○
Continuous	○	○	○	○	○	○	*10	○	○	○				○	*1	*2	○	○	*3	*3	*3
D. EXP	○	○	○	○	○	○	*4	○	○	○				○	○	○	○	○	○	○	○
Zoom macro mode	○	○	○	○	○	○	○	○	○	○	○	○	○		○	○	○	○	○	○	○
Spot metering	○	○	○	○	○	○	*1	○	×	×	○	*1	○	○		○	○	○	×	×	×
Self/Remote	○	○	○	○	○	○	*2	○	○	○	○	*2	○	○	○		○	○	○	○	○
+/–compensation	○	○	○	×	○	○	○	○	○	○	○	○	○	○	○	○		○	*5	*5	*5
Zooming	○	○	○	○	○	×	○	○	○	○	○	○	○	○	○	○	○		○	○	○
AUTO	○	○	○	×	○	○	○	○	○	○	○	*3	○	○	×	○	*5	○			
AUTO-S	○	○	○	×	○	○	*9	○	○	○	○	*3	○	○	×	○	*5	○			
FILL-IN	○	×	×	×	○	○	×	×	×	×	○	*3	○	○	×	○	*5	○			
Reset operation	H	R	R	R	H	R	R	R	R	R	H	R	*6	R	R	R	R	*7	H	H	R
Power switch off	H	H	H	H	H	H	H	H	H	H	H	H	H	R	R	R	H	*8	H	H	H
Display off	H	H	H	H	H	H	H	H	H	H	H	H	H	H	R	H	H	H	H	H	H

○: Combination usable × : Combination unusable H: Hold R: Reset

*1 : Spot metering only performed on first frame.
*2 : Self-timer only takes one shot.
*3 : Flash fires randomly whenever capacitor is charged.
*4 : Changes to continuous mode after shooting second frame.
*5 : Corrects flash Guide No.
*6 : Reset before shooting, Hold after the first frame.
*7 : Lens moves to ∞.
*8 : Lens barrel contracts.
*9 : Automatic flash. (Pre-flash does not operate to allow rapid response to moving subjects.)
*10: AF works once for every two frames (odd numbered frames)

6. Release Timing Chart



Explanation of Release Timing Chart

① The release sequence starts when the 2R switch comes ON after the AE and AF functions finish their calculations.

② Flow current to the MH-Fand MG-S and hold the 1st and 2nd curtains.

③ The ST motor closes the aperture.

④ The mirror is moved up, and the shutter charge is released.

The following actions occur simultaneously as the MS motor rotates.

④ a, b and c — The MS motor is being turned ON and mirror up continues until the MUSW is turned ON. If the MUSW is turned ON mirror up ends to brake the MS motor.

④ d, e — The shutter charge is released and the Mg holds the 1st and 2nd curtains in place. The SC switch goes OFF.

⑤ When the timer starts, the charge to the MG-F is cut, thereby starting the 1st curtain starts. The AV motor is charged and starts the aperture control.

⑥ If the timer (shutter speed) reaches the specified value, the power of the MG-S is turned OFF and the 2nd curtain starts.

⑦ Mirror down/ shutter charge
After the 2nd curtain finishes its scan, the MS motor starts moving again and the following actions take place.

⑦ a, b — The mirror moves down and the MU switch goes OFF.

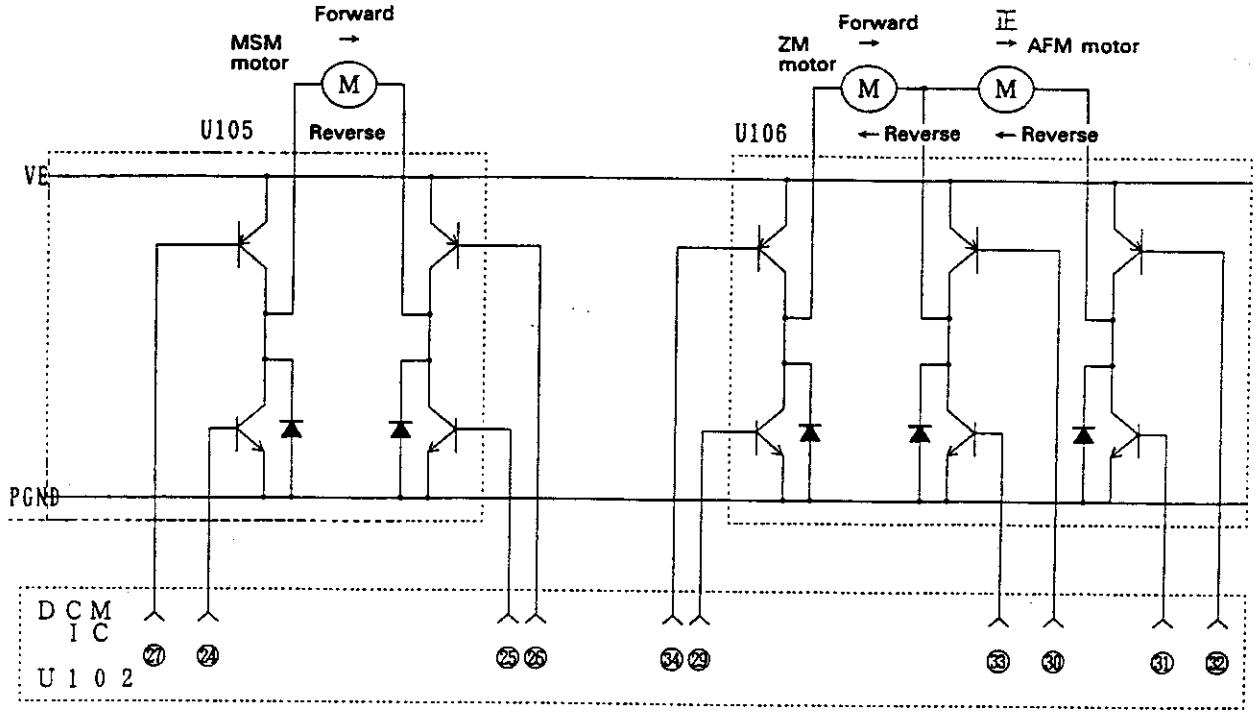
⑦ c, d and e — The MS motor stays charged until the shutter is charged. When the SC switch comes ON, the brakes are applied to the MS motor.

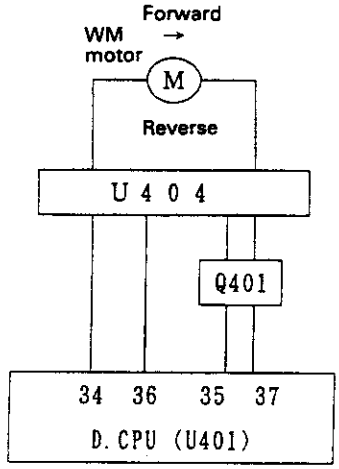
⑧ The ST reverses and opens the aperture.

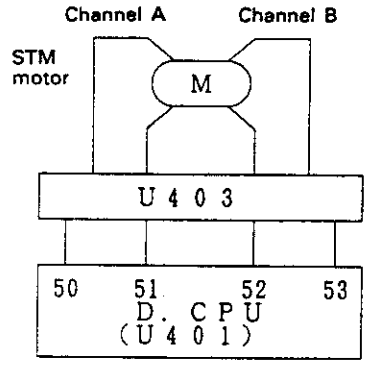
⑨ Wind-up Timed with the MS motor in ⑦, the PI output is changed to W-PI while the W motor is charged so that it, in turn, can start winding up the film. When the PI pulses reach the prescribed amount for one frame, the brakes are applied to the W motor.

End of release sequence.

7. Motor Driving circuit

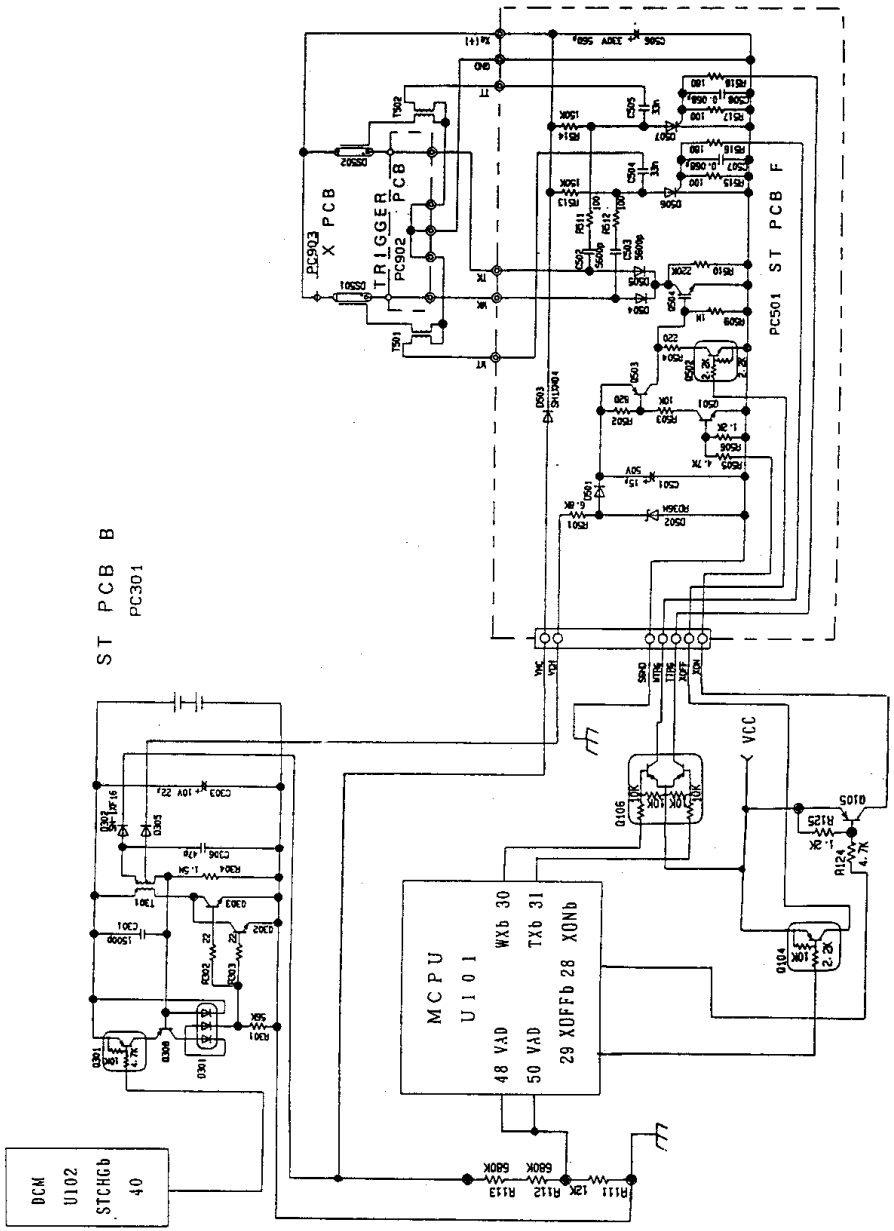






Name of motor	Direction	Function
MSM	Forward	Mirror up, down, shutter charge
	Reverse	Rewinding
ZM	Forward	Lens movement toward W, retracting
	Reverse	Lens movement toward T
AFM	Forward	Focus lens movement toward close range
	Reverse	Focus lens movement toward ∞
WM	Forward	Wind-up
	Reverse	Clutch release (for wind-up)
STM step motor	Forward	Aperture close
	Reverse	Aperture open

8. Flash circuit



① Step up circuit (ST PCB B)

Pin ㊵ of the DCM outputs 'Lo' and turns Q301 ON. The step up circuit starts operating and supplies a high voltage to the VCH line, thereby charging the main capacitor, C506, on the ST PCB F.

1) When Q301 turns ON, Q308, Q302, Q303 turn ON. VE → T301 (primary side) → current flows to PGND
2) The current that flows to T301 (primary side) results in a higher voltage output on the secondary side of T301 in accordance to the number of winding count rate on T301.
3) When Q302 and Q303 dissipate, the collector current will stop rising and the electromotive force on the secondary side will drop to 0 volts.
4) The counter-electromotive force on the secondary side of T301 turns the reverse bias between pins E and B of Q308 OFF.
5) Steps 1 to 4 are repeated to raise the secondary voltage of the current that flows into T301; that is, the input voltage is raised and diminished repeatedly. This cycle charges the main capacitor, C506, to a high voltage.

② Main capacitor voltage detector

1) The voltage, VMC, divided by R113, R112, and R111 is applied to pin 48 of the CPU as voltage VAD and used to detect the voltage of the main capacitor.
2) The value of VAD is then A/D converted. When this value reaches a prescribed value, pin 40 of the DCM is turned OFF to stop charging.

③ Tele firing control circuit

1) Before the flash fires, pins ㉘ (XONb) and ㉙ (XOFFb) of the M. CPU are 'Hi' while Q104, Q105, Q501, Q502, and Q503 are all OFF. Q504 is also OFF because it is pulled down by R509.
2) When the M. CPU moves pin ㉘ (XONb) to 'Lo', devices Q105, Q501, and Q503 all turn ON, thereby turning the gate of Q504 to ON and superimposing it with 36 volts as established by D502.
3) Now when the M. CPU moves pin ㉛ (TXb) to 'Lo', Q106 and D507 turn ON, thereby discharging C505 and charging the secondary side of T502 with a high voltage which D502 uses to fire the flash.

   At the same time, the voltage doubling circuit, formed by C502 and R511, pulls the cathode side of DS502 down to –330 V, making sure the flash does indeed fire.

   ※ Voltage doubling circuit
   Before the flash fires, the D505 side of C502 goes to GND via D505 and R510. The side with R511 is charged to +330 volts via R511 and R514.
   When D507 turns ON, the R511 side of C502 drops immediately to GND and superimposes –330 V on the D505 side.
   D505 holds the level at -330 V and applies 660 V to DS502 until DS502 is fully charged.

4) When DS502 begins firing the flash, the firing current passes C502, R511, and D507 to charge C502. The electric potential of the cathode of DS502 rises immediately from –330 V to 0 V after which the current begins flowing through D505 and Q504.

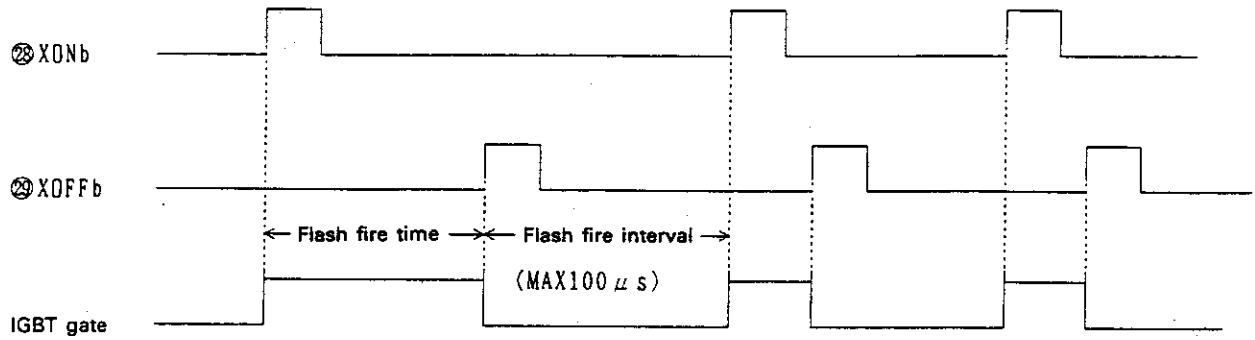
5) To stop the flash firing sequence, the M. CPU moves pin ㉘ (XONb) to 'Hi' to turn devices Q105, Q501, and Q503 OFF. The capacity of the gate on Q504 continues to hold itself at 36 volts, which means the firing is still going on. Then, when the M. CPU moves pin ㉙ (XOFFb) to 'Lo', devices Q104 and Q502 turn ON allowing the current to discharge via R504 from the gate of Q504, which now turns OFF.
It is at this time that the flash actually stops firing.

④ **Wide firing control circuit**
(Operates basically the same as for flashing on the Tele side)
The major differences are in step 3 where,

- M. CPU 31 (TXb) ⟶ 30 (WXb)
- D507, DS502 ⟶ D506, DS501
- C502, R511 ⟶ C503, R512
- D505 ⟶ D504
- C504 ⟶ C503

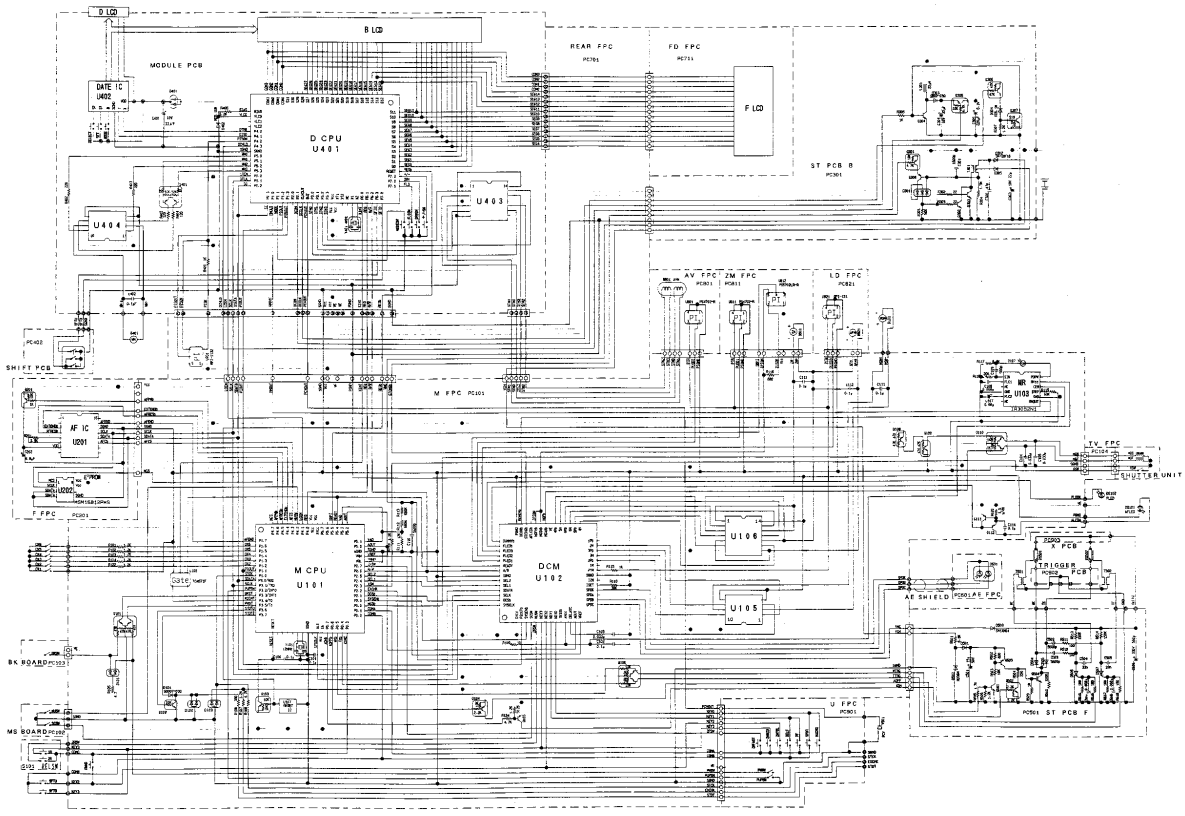
All other steps are identical to the Tele flash firing sequence.

⑤ Super FP (flat) firing Synchronized to speeds between 1/2000 and 1/100
To fire in the super FP mode, the M CPU (U101) alternately outputs signals from ㉘ XONb and ㉙ XOFFb while Q104 and Q105 turn the flash ON and OFF repeatedly.

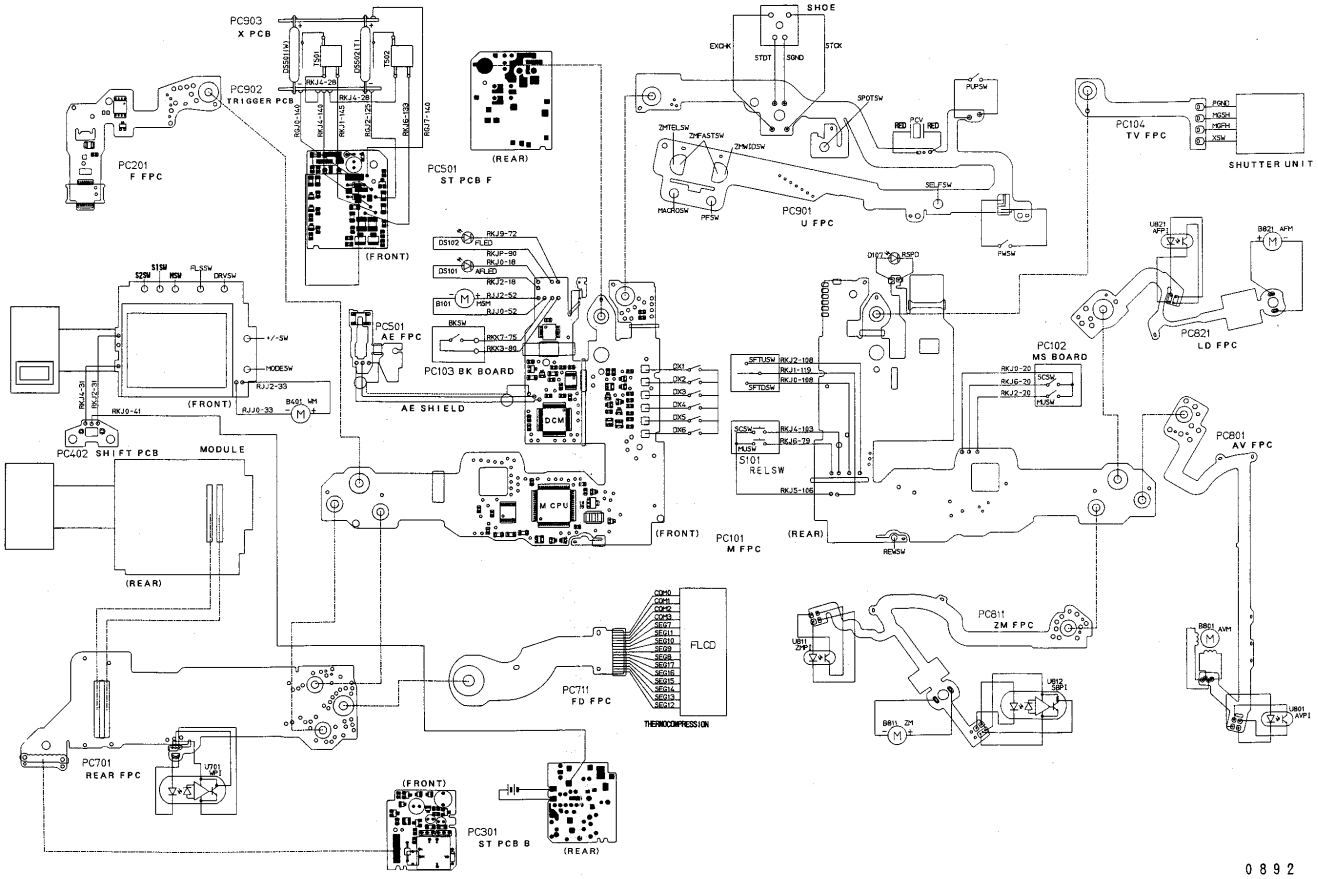


- The flash is triggered only once when firing begins; thereafter, the flash can be fired by turning IGBT ON within 100 μs. Also, in order to ensure trigger reliability, the first flash trigger has to be longer than 10 μs.
Subsequent exposure irregularities (that occur because the MC voltage lowers, reducing the intensity of the flash) are compensated by gradually reducing the firing interval to obtain the proper amount of light per time unit.

REE 630・631 CIRCUIT DIAGRAM

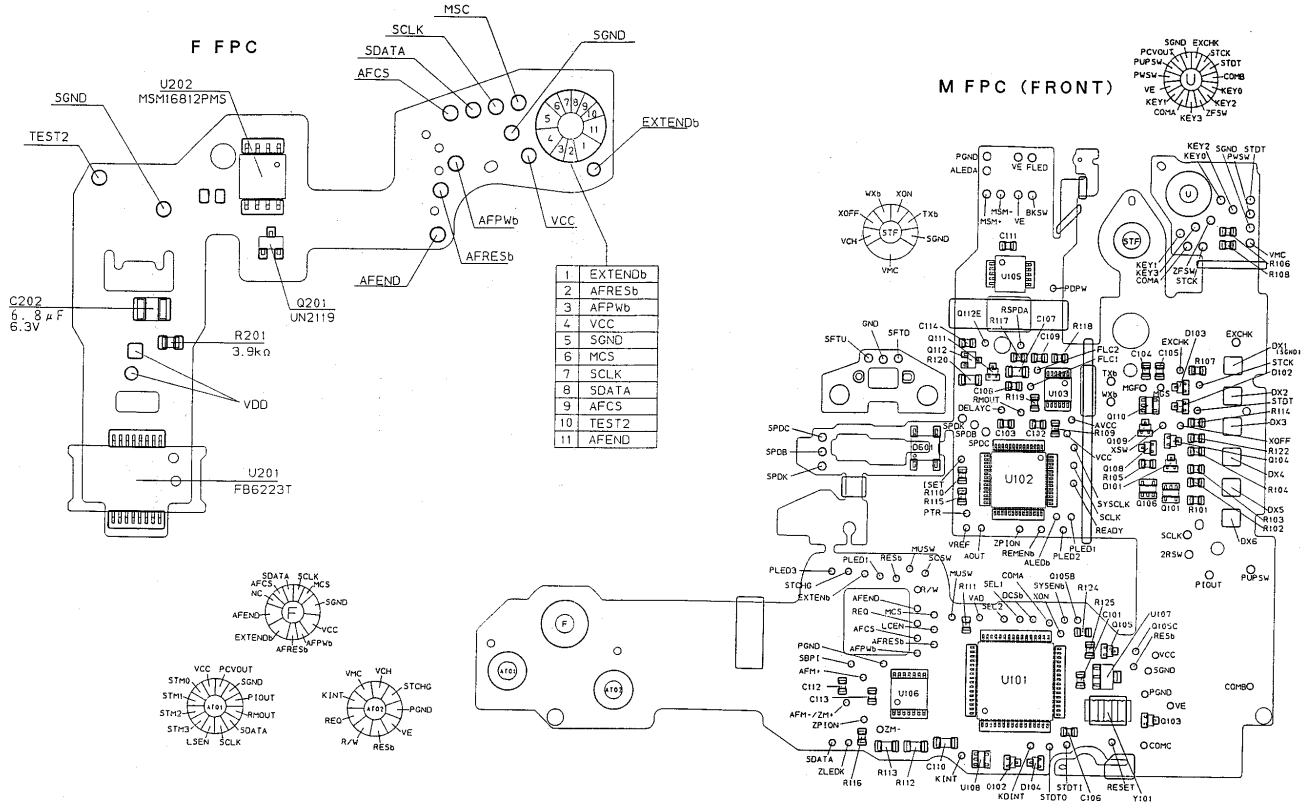


REE 630・631 WIRING DIAGRAM



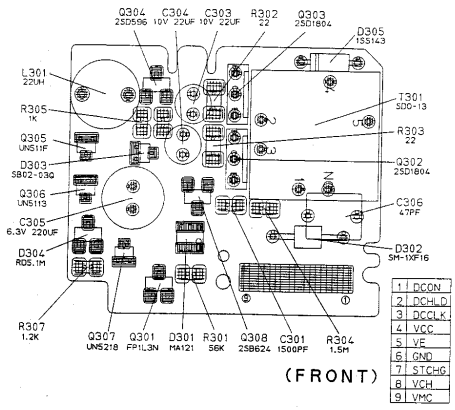
0892

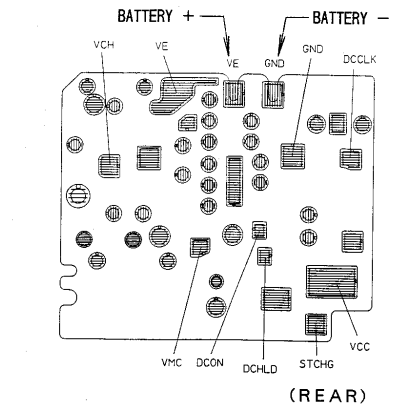
REE 630・631 MOUNTING DIAGRAM



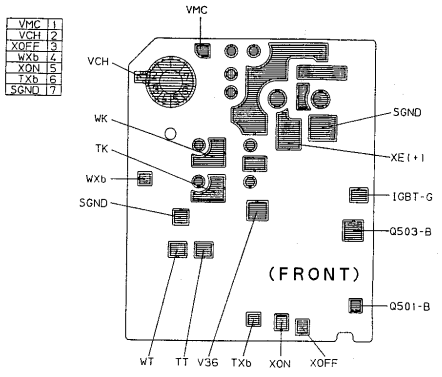
REE 630・631 MOUNTING DIAGRAM

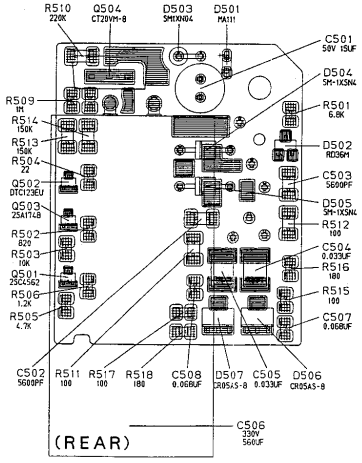
ST PCB B





ST PCB F





V. System upgrading

Olympus IS/L lens A-28 H.Q. converter 0.8× (Wide converter)

① Magnification: 0.8× (f = 28 mm F 4.5), three elements in two groups
② Shooting range: 0.9 m to ∞
* Filter cannot be used.
* Use lens at wide end. (Otherwise, the outer edge of the picture will appear blurry)
* The built-in flash cannot be used.
* When using the G40, set the exposure mode on the camera to program or aperture priority and move the power switch on the G40 to converter.

Olympus IS/L lens A-200 H.Q. converter 1.5× (Tele converter)

① Magnification: 1.5× (f = 200 mm F5, 6), four elements in two groups
② Shooting range: 3 m to ∞
* Filter cannot be used.
* Use lens at tele end. (Otherwise, the outer edge of the picture will appear dim)
* The built-in flash cannot be used.
* When using the G40, set the exposure mode on the camera to program or aperture priority and move the power switch on the G40 to converter.

Olympus IS/L lens A-macro H.Q. converter f=40 cm (1:2.6) (Macro converter)

① Magnification range: 1/2.6× (Tele, close range) to 1/11× (Wide, ∞), two elements in one group
② Shooting range: 0.35 m to 0.41 m (from front ring of camera)
* G40 and filter cannot be used. Macro mode cannot be used
* When using the built-in flash, set the exposure mode on the camera to aperture priority or manual, and attach the diffuser. (The aperture value will flash in the display in the aperture priority mode but does not have an effect on shooting.)
* If the distance to subject is too close, the release will lock. However, when the subject is too far, the shutter can be released even if the subject is out of focus.
* Parallax can cause the subject to appear out of focus even when the AF illuminator is on.

Electronic flash G40

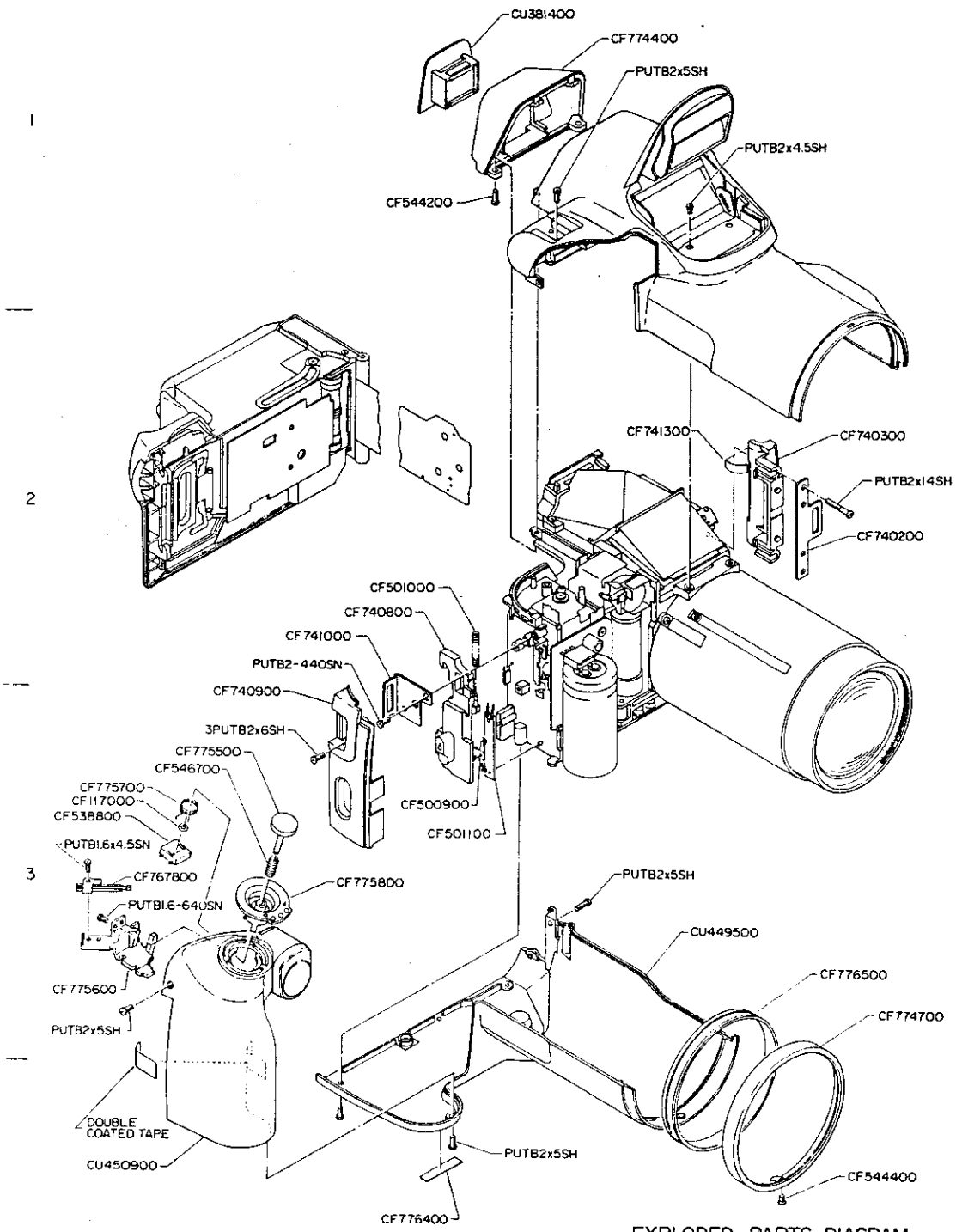
① The operating mode of G40 is selected automatically according to the exposure mode of the camera.

Camera	G40
Program Aperture priority Shutter Priority	AUTO (G40 selects 1st or 2nd curtain synchro.)
Manual	MANUAL (G40 determines which MANUAL mode to select.)

②The " ϟ " indicator on the camera will light up when G40 is fully charged. The flash will fire at shutter speeds lower than 1/100 sec.
③ If both built-in flash and G40 are turned on, the " ϟ " on the camera will light up when both flashes are charged. Note, if only one of the flashes has been fully charged, only that flash will fire.
④ G40 will go into standby mode about 30 seconds after the camera goes into standby mode, or after the power has been turned off.
⑤ Tele or Wide coverage angle (T or W side) will change automatically according to the focal length of the camera.

Focal length of camera	G40
91 mm or more	T side
108 or lower	W side

⑥ Spot metering will not work when G40 is on.



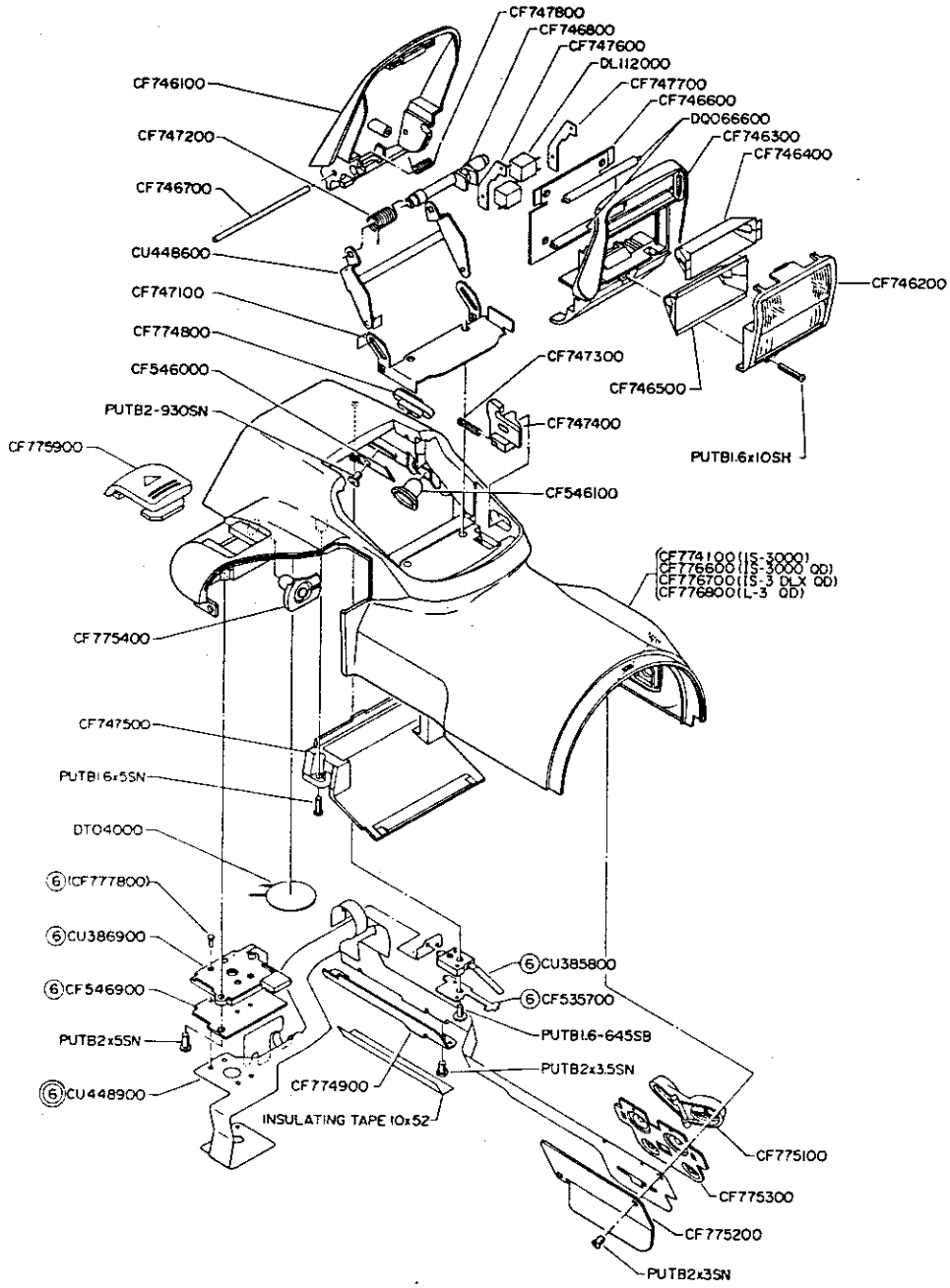
EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
IS - 3000	REE630	1/7
IS - 3 DLX IS-3000 Quartzdate L-3 Quartzdate	REE631	

0692

A B C D

1 2 3



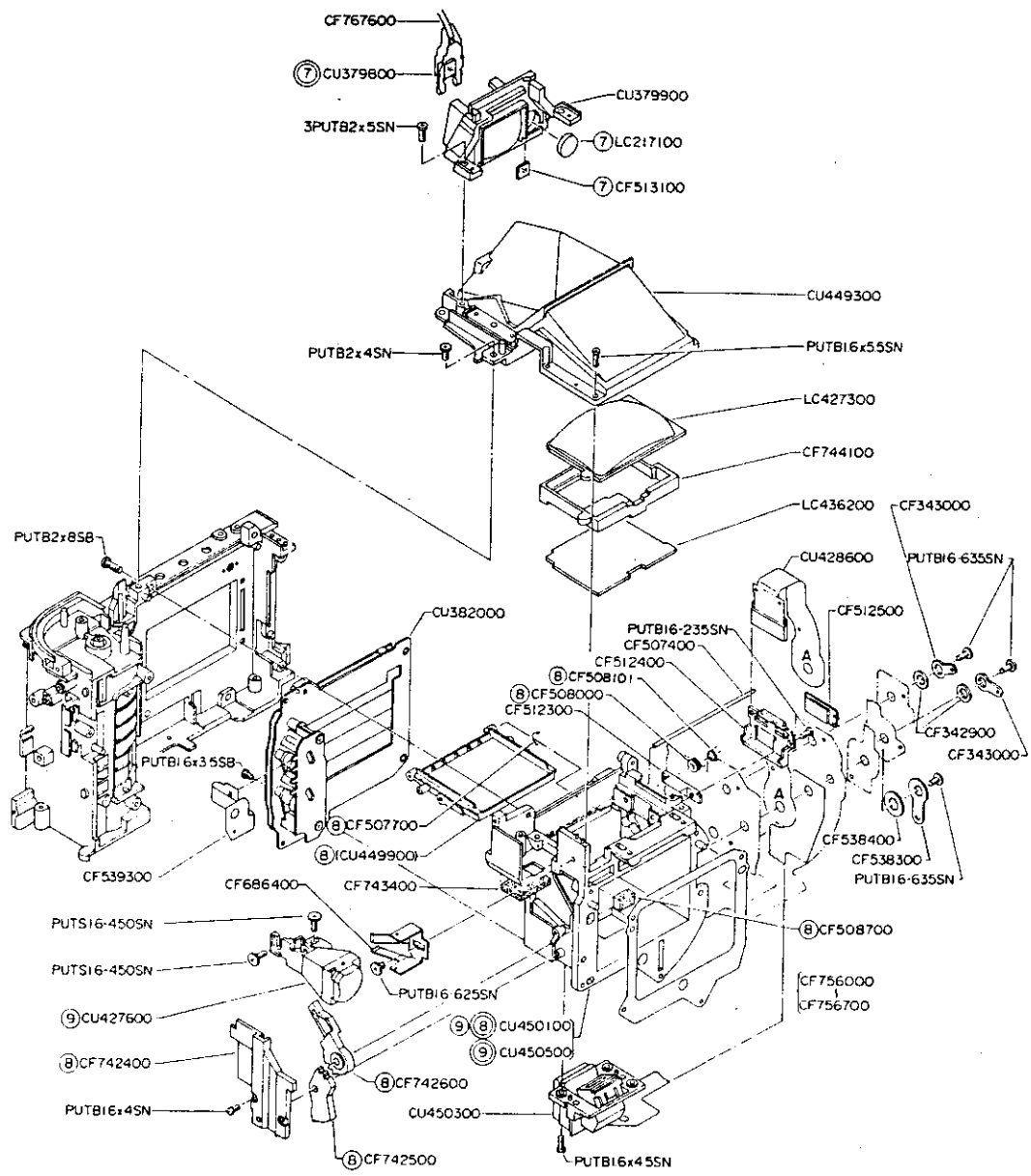
EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
IS - 3000	REE630	2/7
IS - 3 DLX IS-3000 Quartzdate L - 3 Quartzdate	REE631	

1092

A B C D

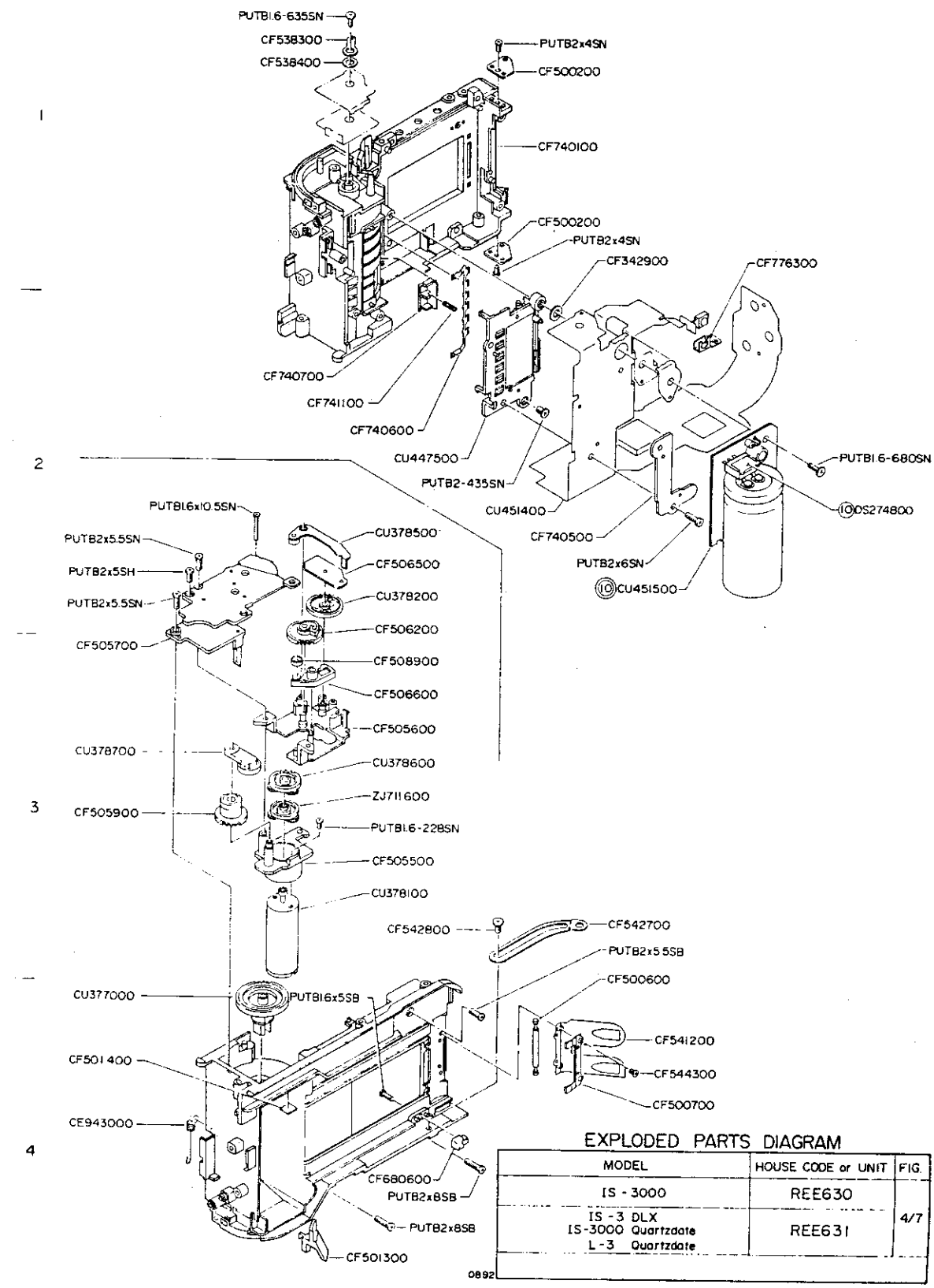
1 2 3 4



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
IS - 3000	REE630	3/7
IS -3 DLX IS-3000 Quartzdate L -3 Quartzdate	REE631	

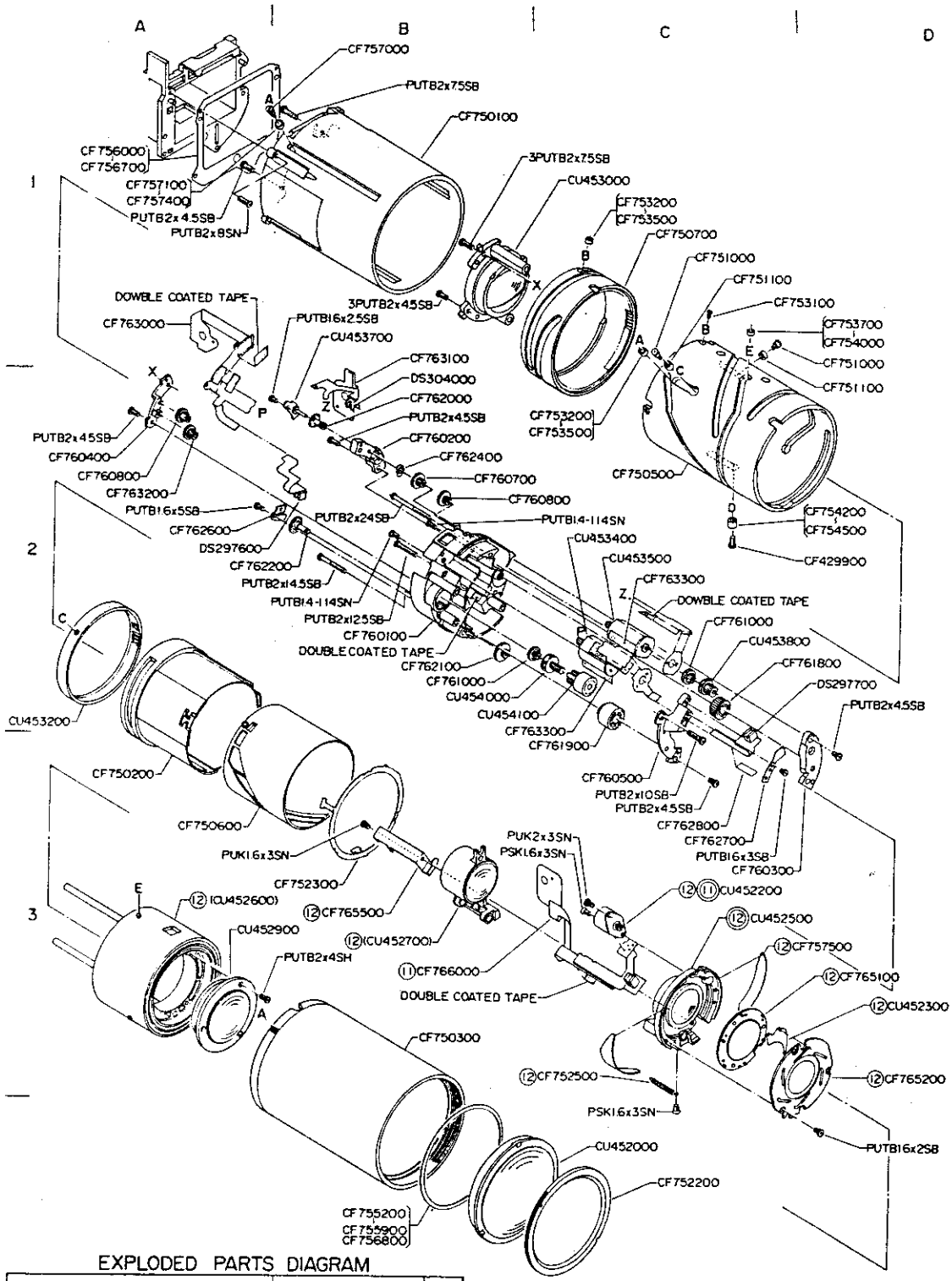
1192



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
IS - 3000	REE630	4/7
IS - 3 DLX IS-3000 Quartzdate L-3 Quartzdate	REE631	

0892



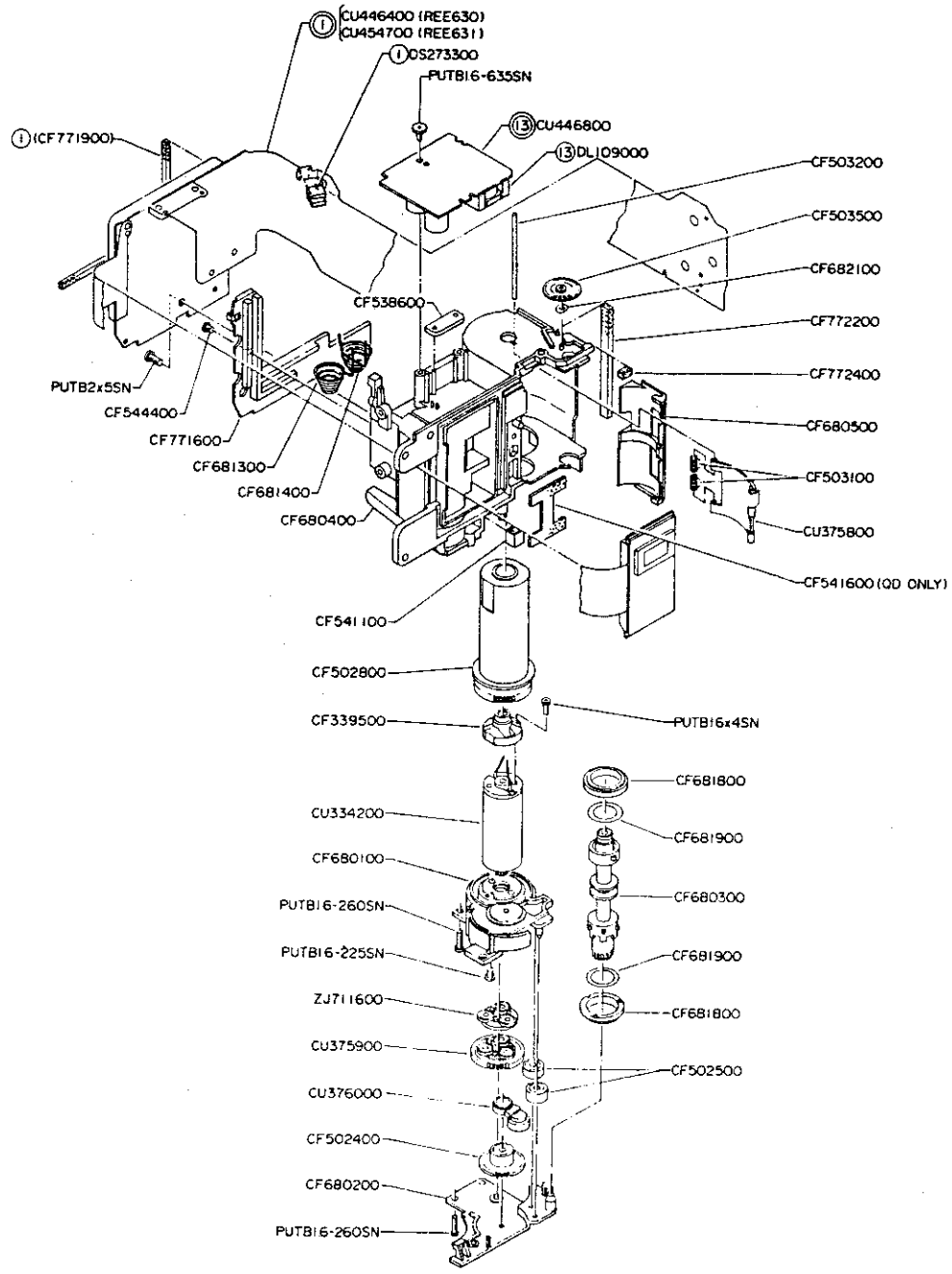
EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
IS - 3000	REE630	5/7
IS - 3 DLX IS-3000 Quartzdate L - 3 Quartzdate	REE631	

1092

A B C D

1 2 3 4



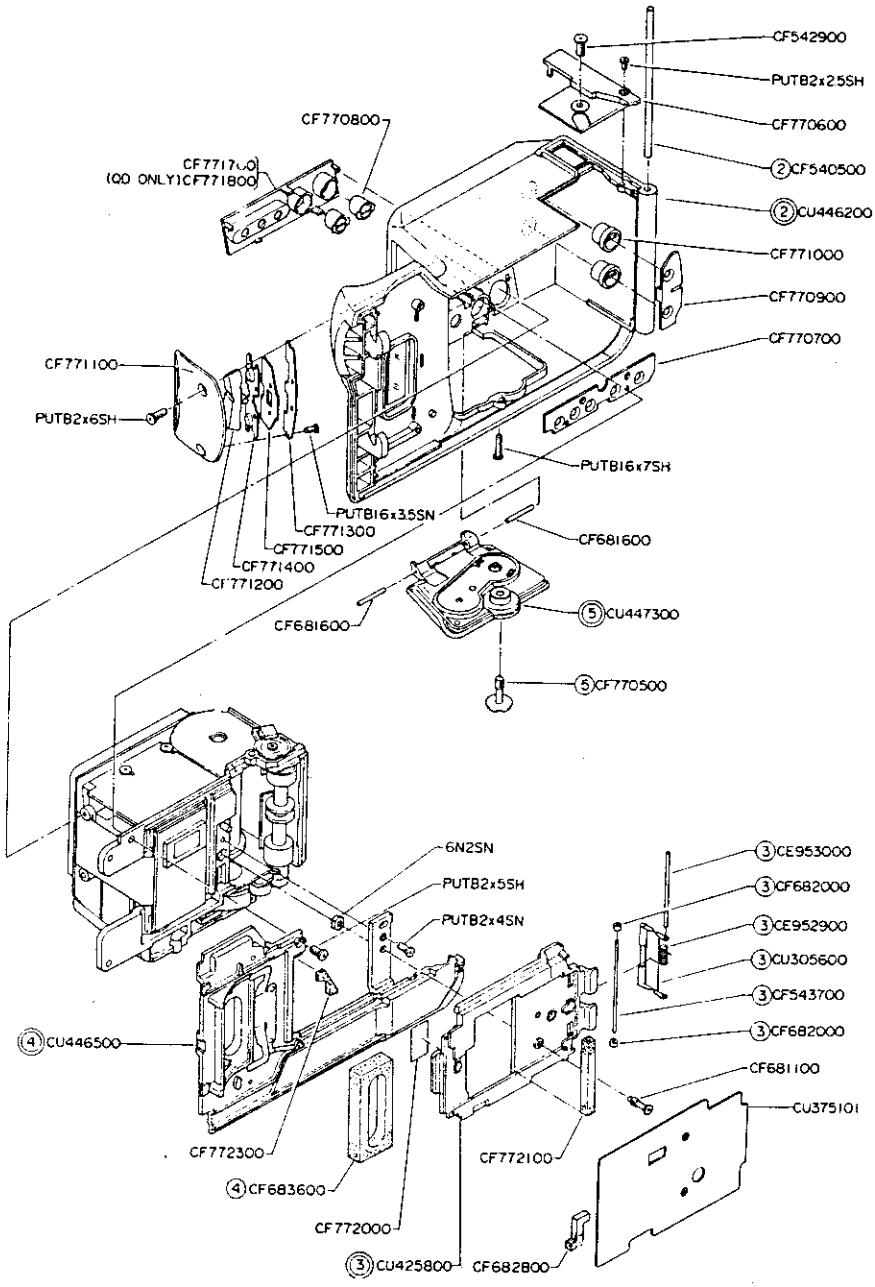
EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
IS - 3000	REE630	6/7
IS - 3 DLX IS-3000 Quartzdate L - 3 Quartzdate	REE631	

0892

A B C D

1 2 3 4



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
IS - 3000	REE630	7/7
IS - 3 DLX IS-3000 Quartzdate L-3 Quartzdate	REE631	

0892

PARTS LIST

REE 630,631

PARTS No.	NAME OF PARTS	NOTE
CE943000	SPRING	4-A4
CE952900	GUIDE SPRING 1	7-D3
CE953000	GUIDE SHAFT 1	7-D3
CF117000	B LEVER WASHER	1-A3
CF339500	SP BASE	6-B2
CF342900	RUBBER 1	3-D3, 4-C1
CF343000	STOPPER	3-D2, D3
CF429900	ROLLER SCREW	5-D2
CF500200	HINGE HOLDER	4-C1
CF500600	B ROLLER	4-C3
CF500700	B HOLDER	4-C4
CF500900	BK SWITCH	1-B2
CF501000	LATCH SPRING	1-B2
CF501100	BK BOARD	1-B3
CF501300	P HOLDER	4-B4
CF501400	P RUBBER	4-A4
CF502400	W6 GEAR	6-B3
CF502500	W7 GEAR	6-C3
CF502800	SPOOL	6-B2
CF503100	GUIDE SPRING 2	6-D2
CF503200	GUIDE SHAFT 2	6-D1
CF503500	SP GEAR 2	6-D1
CF505500	MS PLATE 1	4-B3
CF505600	MS PLATE 2	4-B3
CF505700	MS PLATE 3	4-A3
CF505900	M SUN GEAR	4-A3
CF506200	MS CAM GEAR	4-B2
CF506500	MS PCB	4-B2
CF506600	MU LEVER	4-B3
CF507400	M SHAFT	3-C2
CF507700	SM SPRING	3-B3
CF508000	MD COLLAR	3-C3
CF508101	MD SPRING	3-C3
CF508700	M DAMPER	3-D3
CF508900	MS ROLLER 2	4-B3
CF512300	PF PRISM	3-C3
CF512400	FD FRAME	3-C3
CF512500	F LED	3-D2
CF513100	AE FILTER	3-C1
CF535700	ST SWITCH 2	2-C3
CF538300	CONNECTOR PLATE 1	3-D3, 4-B1
CF538400	CONNECTOR RUBBER 1	3-D3, 4-B1
CF538600	CONNECTOR RUBBER 2	6-B1
CF538800	RELEASE SWITCH 2	1-A3
CF539300	TV FPC	3-A3
CF540500	HINGE SHAFT	7-D1
CF541100	B NUT	6-B2
CF541200	S SHEET	4-C4
CF541600	D SPONGE	6-D2
CF542700	BK ARM	4-C3
CF542800	BK SHAFT 1	4-B3
CF542900	BK SHAFT 2	7-D1
CF543700	F RING SHAFT	7-D3
CF544200	EYE CUP SCREW	1-B1
CF544300	S SHEET SCREW	4-C4
CF544400	FRONT RING SCREW	1-D4, 6-A2
CF546000	PW CONTACT	2-A2
CF546100	SELF BUTTON	2-C2
CF546700	RELEASE SPRING	1-A3
CF546900	SHOE PLATE	2-A3
CF680100	W BASE PLATE 1	6-B3
CF680200	W BASE PLATE 2	6-B3
CF680300	SPROKET L	6-C3
CF680400	W CASE	6-B2
CF680500	S PLATE 2	6-D2
CF680600	F GUIDE	4-B4
CF681100	INNER COVER SCREW	7-D3
CF681300	BATTERY CONTACT 1	6-B2
CF681400	BATTERY CONTACT 2	6-B2
CF681600	B COVER SHAFT	7-B2, C2
CF681800	SK RING	6-C3
CF681900	SK WASHER	6-C3
CF682000	F RING 3	7-D3
CF682100	SP WASHER	6-D1
CF682800	ST SPONGE	7-C4
CF683600	SPONGE 2	7-B4
CF686400	H HOLDER	3-B3
CF740100	B BASE	4-C1
CF740200	LATCH PANEL L	1-D2
CF740300	HINGE COVER	1-D2
CF740500	DX HOLDER	4-C2
CF740600	DX EARTH	4-B2
CF740700	CONTACT COVER	4-B2
CF740800	BK LATCH	1-B2
CF740900	LATCH COVER	1-B3
CF741000	LATCH PLATE R	1-B2
CF741100	REVERT SPRING	4-B2

PARTS LIST

REE 630, 631

PARTS No.	NAME OF PARTS	NOTE
CF741300	HINGE LIGHT PROOF 2	1-C2
CF742400	MU BASE	3-A4
CF742500	MU GEAR 1	3-B4
CF742600	MU GEAR 2	3-B4
CF743400	FRONT SPONGE	3-B3
CF744100	SCREEN FRAME	3-D2
CF746100	ST CASE	2-A1
CF746200	ST WINDOW	2-D1
CF746300	ST INSULATOR	2-C1
CF746400	REFLECTOR W	2-C1
CF746500	REFLECTOR T	2-C2
CF746600	ST RUBBER	2-C1
CF746700	ST SHAFT	2-A1
CF746800	ARM SHAFT A	2-C1
CF747100	ARM PLATE	2-A1
CF747200	ST SPRING	2-A1
CF747300	ST BUTTON SPRING	2-C2
CF747400	ST BUTTON	2-C2
CF747500	ST COVER	2-A2
CF747600	TRIGGER PCB	2-C1
CF747700	X PCB	2-C1
CF747800	ST CAM SPRING	2-C1
CF750100	LENS BARREL	5-B1
CF750200	CAM BARREL	5-A3
CF750300	1GZ BARREL	5-B3
CF750500	CAM RING A	5-C2
CF750600	CAM RING B	5-A3
CF750700	F RING	5-C1
CF751000	Z SHAFT	5-C1. D1
CF751100	Z ROLLER	5-C1. D1
CF752200	1G HOLDER	5-C4
CF752300	CAM B HOLDER	5-B3
CF752500	G SPRING	5-C3
CF753100	CAM A SHAFT	5-D1
CF753200	S ROLLER LL	5-C1
CF753300	S ROLLER L	5-C1
CF753400	S ROLLER M	5-C1
CF753500	S ROLLER S	5-C1
CF753700	2G ROLLER LL	5-D1
CF753800	2G ROLLER L	5-D1
CF753900	2G ROLLER M	5-D1
CF754000	2G ROLLER S	5-D1
CF754200	CAM ROLLER LL	5-D2
CF754300	CAM ROLLER L	5-D2
CF754400	CAM ROLLER M	5-D2
CF754500	CAM ROLLER S	5-D2
CF755200	ZP WASHER 1	5-B4
CF755300	ZP WASHER 2	5-B4
CF755400	ZP WASHER 3	5-B4
CF755500	ZP WASHER 4	5-B4
CF755600	ZP WASHER 5	5-B4
CF755700	ZP WASHER 6	5-B4
CF755800	ZP WASHER 7	5-B4
CF755900	ZP WASHER 8	5-B4
CF756000	FC WASHER 1	3-D3, 5-A1
CF756100	FC WASHER 2	3-D3, 5-A1
CF756200	FC WASHER 3	3-D3, 5-A1
CF756300	FC WASHER 4	3-D3, 5-A1
CF756400	FC WASHER 5	3-D3, 5-A1
CF756500	FC WASHER 6	3-D3, 5-A1
CF756600	FC WASHER 7	3-D3, 5-A1
CF756700	FC WASHER 8	3-D3, 5-A1
CF756800	ZP WASHER 9	5-B4
CF757000	1G SHAFT	5-B1
CF757100	1G ROLLER L	5-C2
CF757200	1G ROLLER M	5-C2
CF757300	1G ROLLER S	5-C2
CF757400	1G ROLLER SS	5-C2
CF757500	3G LIGHT PROOF P	5-D3
CF760100	MOTOR FRAME	5-B2
CF760200	AF BASE 1	5-B2
CF760300	AF BASE 2	5-C3
CF760400	Z BASE 1	5-A2
CF760500	Z BASE 2	5-C3
CF760700	F2 GEAR	5-B2
CF760800	F3 GEAR	5-A2. B2
CF761000	ZF SUN GEAR	5-B2. C2
CF761800	F GEAR	5-D2
CF761900	Z GEAR	5-C3
CF762000	FPI RACK	5-B2
CF762100	ZPI GEAR	5-B2
CF762200	ZPI RACK	5-B2
CF762400	SPNW	5-B2
CF762600	ZPI HOLDER	5-A2
CF762700	ZSW PLATE	5-C3
CF762800	Z SHEET	5-C3
CF763000	ZM FPC	5-A1
CF763100	LD FPC	5-B1

PARTS LIST

REE 630,631

PARTS No.	NAME OF PARTS	NOTE
CF763200	Z3 GEAR	5-A2
CF763300	MOTOR LIGHT PROOF	5-C2
CF765100	AV RING	5-D3
CF765200	AV CAM	5-D3
CF765500	FP PLATE	5-B3
CF766000	AV FPC	5-B3
CF767600	AE SHIELD	3-B1
CF767800	SHIFT SWF	1-A3
CF770500	D SCREW 30	7-C2
CF770600	PI COVER 30	7-D1
CF770700	FD RUBBER	7-D2
CF770800	FD BUTTON	7-B1
CF770900	MH RUBBER	7-D2
CF771000	MH BUTTON	7-D1
CF771100	SHIFT COVER B	7-A2
CF771200	SHIFT SWB	7-B2
CF771300	SHIFT PLATE B	7-B2
CF771400	SHIFT RUBBER B	7-B2
CF771500	SHIFT PCB	7-B2
CF771600	M SPACER	6-A2
CF771700	SW PLATE D	7-B1
CF771800	SW PLATE N	7-B1
CF772000	A SPONGE 2	7-B4
CF772100	A SPONGE 3	7-C3
CF772200	A SPONGE 4	6-D1
CF772300	A SPONGE 5	7-B3
CF772400	A SPONGE 6	6-D2
CF774100	TOP COVER iS-3000	2-C2
CF774400	EYE CUP	1-C1
CF774700	FRONT RING	1-D3
CF774800	PW SWITCH	2-A2
CF774900	PW SBASE	2-B3
CF775100	Z BUTTON	2-C3
CF775200	Z SWITCH BASE	2-C4
CF775300	Z RUBBER	2-C4
CF775400	SP RUBBER	2-A2
CF775500	RELEASE BUTTON	1-A3
CF775600	RELAESE BASE	1-A3
CF775700	SHIFT SPRING F	1-A3
CF775800	SHIFT LEVER F	1-B3
CF775900	SHOE COVER	2-A2
CF776300	REMOTE CONT. HOLDER	4-D1
CF776400	NUMBER SEAL	1-B4
CF776500	FRONT RING COVER	1-D3
CF776600	TOP COVER ED iS-3000QD	2-C1
CF776700	TOP COVER ND iS-3 DLX QD	2-C1
CF776800	TOP COVER J 3-L QD	2-C1
CU305600	GUIDE PLATE 1	7-D3
CU334200	W MOTOR	6-B3
CU375101	PRESSURE PLATE	7-D3
CU375800	GUIDE PLATE 2	6-D2
CU375900	CARRIER B	6-B3
CU376000	CARRIER W	6-B3
CU377000	R GEAR	4-A4
CU378100	MS MOTOR	4-B3
CU378200	AV CAM GEAR	4-B2
CU378500	SC LEVER 2	4-B2
CU378600	M CARRIER 1	4-B3
CU378700	M CARRIER 2	4-A3
CU379800	AE FPC	3-B1
CU379900	EYEPIECE FRAME	3-C1
CU381400	EYEPIECE LENS	1-B1
CU382000	SHUTTER	3-B2
CU385800	ST SWITCH 1	2-C3
CU386900	ST CONTACT	2-A3
CU425800	INNER COVER 2	7-C4
CU427600	ILLUMINATOR UNIT	3-A3
CU428600	FD FPC	3-D2
CU446200	REAR COVER	7-D1
CU446400	MODULE N1	6-B1
CU446500	INNER COVER 13	7-A3
CU446800	ST PCB B	6-C1
CU447300	D COVER 30	7-C2
CU447500	DX COVER	4-B2
CU448600	ST ARM 1	2-A1
CU448900	U FPC	2-A3
CU449300	P FRAME 1	3-D2
CU449500	BOTTOM COVER	1-C3
CU450100	FRONT COVER 2	3-C3
CU450300	SENSOR FRAME 2	3-B4
CU450500	FRONT COVER 3A	3-C3
CU450900	GRIP 1	1-A4

⑦ Firing patterns for each mode

Camera mode			G40 mode (power switch in ON position)			
Exposure	Flash mode		AUTO-1st curtain synchro	AUTO-2nd curtain synchro	MANUAL	MULTI
Program or aperture or Shutter Priority	OFF	Int. flash	No firing	No firing	These modes cannot be used together	These modes cannot be used together
		Ext. flash	Guide No. controlled flash	Guide No. controlled flash		
	AUTO	Int. flash	Catchlight firing	No firing		
		Ext. flash	Guide No. controlled firing	Guide No. controlled firing		
	AUTO-S	Int. flash	Pre-flash followed by catchlight firing	Pre-flash only		
		Ext. flash	Guide No. controlled firing	Guide No. controlled firing		
	*OFF-IN	Int. flash	Catchlight firing	No firing		
		Ext. flash	Guide No. controlled firing	Guide No. controlled firing		
Manual	OFF	Int. flash	These modes cannot be used together	These modes cannot be used together	No firing	No firing
		Ext. flash			Manual firing	Manual firing
	ON	Int. flash			Full firing on W side	No firing
		Ext. flash			Manual firing	Manual firing
Night mode	OFF	Int. flash	No firing	No firing	These modes cannot be used together	These modes cannot be used together
		Ext. flash	Controlled firing at Guide number for -0.5 EV	Controlled firing at Guide number for -0.5 EV		
	AUTO	Int. flash	Catchlight firing	Catchlight firing		
		Ext. flash	Controlled firing at Guide number for -0.5 EV	Controlled firing at Guide number for -0.5 EV		
	AUTO-S	Int. flash	Catchlight firing after pre-firing	Pre-firing only		
		Ext. flash	Controlled firing at Guide number for -0.5 EV	Controlled firing at Guide number for -0.5 EV		

* Fill-in mode cannot be used with the aperture priority mode.
* Int. flash: built-in flash, Ext. flash: G40
* If G40 is bounced fired, the Guide number controlled firing will change to normal auto (outside light auto).
* Catchlight firing : ☆ Firing controlled by Guide No. -3 EVs from quantity of light of G40.
  ☆ Firing may not operate if the quantity of light from the built-in flash is Guide No. 2.8 or less.
  ☆ G40 cannot be used for shooting distances within 1.2 m (macro area).
* Catchlight firing is only effective when the light from the G40 is bounced.
* If the camera and G40 are in manual, the built-in flash and G40 will fire using the Guide No. in the table below.

Guide No. set by G40	G40, Flash occurs on tele side	G40, Flash occurs on wide side
32/40	45	35
16/20	28	22
8/10	22	17

(ISO 100m)

PARTS LIST

PARTS No.	NAME OF PARTS	NOTE
CU451400	M FPC	4-C2
CU451500	ST PCB F	4-C2
CU452000	1G FRAME	5-C4
CU452200	ST MOTOR	5-C3
CU452300	SHUTTER BLADE	5-D3
CU452500	3G RING 2	5-C3
CU452900	2G RING	5-A3
CU453000	5G RING	5-C1
CU453200	Z RING	5-A2
CU453400	Z MOTOR	5-C2
CU453500	F MOTOR	5-C2
CU453700	FPI HOLDER	5-B1
CU453800	F CARRIER	5-C2
CU454000	Z CARRIER	5-B2
CU454100	Z CARRIER 2	5-B2
CU454700	MODULE D1	6-B1
ZJ711600	CARRIER A	4-B3, 6-B3
LC217100	AE LENS	3-C1
LC427300	1-T	3-D2
LC436200	SCREEN	3-D2
DL109000	TRANSFORMER	6-C1
DL112000	TRANSFORMER	2-C1
DQ066600	FLASH	2-C1
DS273300	PI	6-B1
DS274800	TRANSISTOR	4-D2
DS297600	PI	5-A2
DS297700	PI	5-D2
DS304000	PI	5-B2
DT040000	PCV	2-A3
3PUTB1.6×4.5SN		
3PUTB1.6×6SN		
3PUTB2.0×4.5SB		
3PUTB2.0×5SN		
3PUTB2.0×6SH		
3PUTB2×7.5SB		

PARTS No.	NAME OF PARTS	NOTE
PSK1.6×3SN		
PUK1.4 - 114SN		
PUK1.6 - 225SN		
PUK1.6 - 228SN		
PUK1.6 - 2SB		
PUK2.0×3SN		
PUK2.0×4SN		
PUTB1.6 - 2.5SB		
PUTB1.6 - 235SN		
PUTB1.6 - 260SN		
PUTB1.6 - 450SN		
PUTB1.6 - 625SN		
PUTB1.6 - 635SN		
PUTB1.6 - 640SN		
PUTB1.6 - 645SB		
PUTB1.6 - 680SN		
PUTB1.6 ×10.5SN		
PUTB1.6 ×10SH		
PUTB1.6 ×3.5SB		
PUTB1.6 ×3SB		
PUTB1.6 ×3SN		
PUTB1.6 ×4.5SN		
PUTB1.6 ×4SH		
PUTB1.6 ×5.5SN		
PUTB1.6 ×5SB		
PUTB1.6 ×5SN		
PUTB1.6 ×7SH		
PUTB2.0 - 435SN		
PUTB2.0 - 440SN		
PUTB2.0 - 930SN		
PUTB2.0 ×10SB		
PUTB2.0 ×12.5SB		
PUTB2.0 ×14.5SB		
PUTB2.0 ×14SN		
PUTB2.0 ×2.5SH		
PUTB2.0 ×24SB		
PUTB2.0 ×3.5SN		
PUTB2.0 ×3SN		
PUTB2.0 ×4.5SB		
PUTB2.0 ×4.5SN		
PUTB2.0 ×4SN		

PARTS LIST

PARTS No.	NAME OF PARTS		NOTE
PUTB2.0 ×5.5SB			
PUTB2.0 ×5.5SN			
PUTB2.0 ×5SH			
PUTB2.0 ×5SN			
PUTB2.0 ×6SH			
PUTB2.0 ×6SN			
PUTB2.0 ×7.5SB			
PUTB2.0 ×7SB			
PUTB2.0 ×8SB			
PUTB2.0 ×8SN			
6N2SN			
RGJ0-140	BLACK	L=10	
RGJ2-125	RED	L=10	
RJJ7-154	PURPLE	L=10	
RJJ0-33	BLACK	L=10	
RJJ0-52	BLACK	L=10	
RJJ2-33	RED	L=10	
RKJ2-52	RED	L=10	
RKJ0-108	BLACK	L=10	
RKJ0-18	BLACK	L=10	
RKJ0-20	BLACK	L=10	
RKJ0-41	BLACK	L=10	
RKJ1-119	BROWN	L=10	
RKJ1-145	BROWN	L=10	
RKJ2-108	YELLOW	L=10	
RKJ2-18	BLUE	L=10	
RKJ2-20	RED	L=10	
RKJ2-31	RED	L=10	
RKJ4-103	RED	L=10	
RKJ4-140	RED	L=10	
RKJ4-28	YELLOW	L=10	
RKJ4-31	YELLOW	L=10	
RKJ5-106	YELLOW	L=10	
RKJ6-133	GREEN	L=10	
RKJ6-20	BLUE	L=10	
RKJ6-79	BLUE	L=10	
RKJ9-72	WHITE	L=10	
RKJP-90	PINK	L=10	
RKK3-80	ORANGE	L=10	
RKK7-75	PURPLE	L=10	

PARTS No.	NAME OF PARTS	NOTE
OT1664	INSULATING TAPE	

VI. Restrictions (on usage, operating environment, operation, etc.)

1. The batteries are used for both printing the date and operating the camera. If it takes longer than one minute to replace the batteries, readjust the date afterwards.
2. If no operation is made within 25 seconds the camera will go into power saving mode (LCD panel and LCD display inside viewfinder go out). This time is extended to 5 minutes when:
   (1) the rear cover is open
   (2) the flash is up
   If the camera goes into power saving mode under condition 1, auto loading will not operated when the cover is eventually closed. (In this case, turn the power back on, or press one of the control buttons.)
   If the camera goes into power saving mode under conditions 1, or 2, any of the control buttons not mentioned above, or turning the power back on, will exit the power saving mode.
   - The Self-timer mode will automatically cancel itself approximately 18 minutes later and the camera will enter the power saving mode.
3. Battery power is still being consumed when the power is left ON in the power saving mode. Batteries can last for about four months in the power saving mode.
4. Extremely worn batteries may not have enough power remaining to activate the battery warning indicator.
5. Once the battery warning appears, there may not be enough power to complete shooting a full roll of film. (at low temperatures)
6. Zoom speed differs according to power voltage changes, position, and whether or not a conversion lens is being used.
7. The external LCD panel may appear abnormal for a moment immediately after the power is turned ON.
8. The brightness and readability of the date on the external LCD panel may differ from the other areas.
9. If the batteries are removed with a film loaded in the camera, the film cannot be removed. (clutch will not release)
10. Release will not lock when auto loading fails for ISO 3200 film.
11. Film speeds for DX coded film are set in increments of 1/3.
    Films without the DX code will be set to ISO 32. Without film, the speed will be set to ISO 5000.
12. Infrared film cannot be used.
13. The frame interval section may reach the perforation holes. The positions of the interval section and the perforation holes may shift at the beginning and end of the frames.
14. Auto load will not work if the perforation holes at the lead-in of the film are broken.
15. User must not use home made film cartridges, i.e., must not load film into the cartridge. (To protect shutter curtain and the auto load movement, and prevent erroneous DX code reading)
16. Metering will not start with only the power switch turned on. The release button must be pressed to the first step, or the spot button must be turned ON.
17. Spot metering uses the AF sensor which is why the spot area is about the same as the AF area.
18. Spot metering takes about 0.2 seconds during low luminance levels. (This is because spot metering is done by the AF sensor).
19. Since the exposure is displayed in steps of 1/2 EV while compensation is made in steps of 1/3 EV, the shutter speed and aperture value displays may remain unchanged even though it was compensated.
20. Focus needs to be readjusted after zooming. (After focusing once at the wide end and then zooming to the tele end, the viewfinder may appear out of focus.)
21. Sometimes when releasing the zoom button while zooming toward the wide end, the lens will shift to the tele side. (This is to maintain the performance of the optics system)
22. This will not always work if the Zoom button is only pressed Quickly.
23. The power focus mode is not suitable for focusing on the wide side.
24. The position of the front end of the lens may vary due to the fc adjustment.
25. The focal distance display will change during focusing as well. (This is to serve as a general guideline).
26. Some subjects may 'trick' the AF mechanism. i.e., redundant patterns, near and far subjects,.
27. AF will not work on certain subjects.
    i.e., subjects that have low contrasts, no vertical lines, are redundant patterns, are too bright, are too thin, have near and far subjects, are too far and outside the effective range of the AF illuminator during low luminance levels.

28. In the Night or Scenery modes with the lens at ∞ position, the AF sensor may not produce any output. In this case, the AF program will register the distance to subject as ∞ allowing the shut ter to be released at ∞. However, the output from the AF sensor can be unreliable in which case the AF program will not focus and will lock the release.
29. The parallax effect renders the AF illuminator useless for macro photography at close dis tances (1.2 m or less).
30. In the AF mode, zooming will not operate once the release button is pressed to the first step. (This is because further zooming can cause the subject to go out of focus.)
31. The effect of the red-eye reduction flash will differ by the distance to subject.
32. Far subjects (7 m or more) shot with the built-in flash while using a high speed film of ISO 400 or above may have a dim area at the top of the picture. (In order to correct parallax, the light emitting section is tilted downwards)
33. The built-in flash cannot be used when using the tele converter or wide converter. (Causes an eclipse and prevents exposure from keeping up with flash)
34. After starting the self timer, any changes to the built-in flash or G40 will be compensated for by changes to the shutter speed to ensure the correct amount of exposure is obtained.
35. Mechanical cable releases cannot be used. However, a remote control can be used instead.
36. If light enters the Finder from behind while using the Remote control, the AF and AE might be incorrect
37. Using the external G40 Flash will limit the position behind the camera from which the remote control can be used.
38. Using the wide converter will limit the position in front of the camera from which the remote control can be used.

B. INSPECTION STANDARD

1. Control Buttons and Knobs

	Inspection Items and Standards		
	Operating force (g)	Stroke (mm)	Remarks
Power switch	180 ± 100	3.0 ± 0.5	
Rear cover opening and closing knob	+15 320 - 100	3.2 ± 0.5	Full stroke 3.6 mm
Release button	1st step 120 ± 40	0.75 ± 0.35	1.4 mm stroke from starting position
	2nd step 510 ± 100	1.05 ± 0.45	
Zoom button	1st step 90 ± 30	1.6 ± 0.3	Zoom button at apex position
	2nd step 400 ± 100	2.7 ± 0.4	
Shift button B	120 ± 30	0.7 ± 0.3	Shift button apex at top and bottom positions
Shift dial F	130 ± 50	2.5 ± 0.3	Along perimeter of button
Spot button	130 ± 50	1.0 ± 0.3	
Flash pop-up button	220 ± 100	1.2 ± 0.4	Full stroke 2 mm
Self/Remote Button	100 ± 30	1.0 ± 0.3	Protrudes 2.5 mm from bottom of facing.
Mode button	100 ± 30	0.9 ± 0.3	Protrudes 0.84 mm in direction of stroke
+/– Compensation / Mode button	100 ± 30	0.9 ± 0.3	Protrudes 0.84 mm in direction of stroke
PF button	100 ± 30	0.9 ± 0.3	Protrudes 1.6 mm
Macro button	230 ± 30	0.9 ± 0.3	Protrudes 1.6 mm
Drive button	100 ± 30	0.9 ± 0.3	Protrudes 0.86 mm in direction of stroke
Flash button	10 0 ± 30	0.9 ± 0.3	Protrudes 0.86 mm in direction of stroke
Rewind button	100 ± 30	0.5 ± 0.2	Protrudes 0.8 mm
Date mode button	130 ± 30	0.9 ± 0.3	Date models only
Date set button	130 ± 30	0.9 ± 0.3	
Date adjustment button	130 ± 30	0.9 ± 0.3	

2. Back Cover Closing Force

2.5 kg or less (with Kodak Gold 100 loaded, pressing around key on rear cover)

3. Viewfinder

Diopter: $-0.5^{+0}_{-0.5}$ diop
Visual field rate: 85 ± 2%
Optical path length: 46.05 ± 0.1 mm

4. Frame Interval

Each frame must be at least 0.4 mm apart (normal room temperature and humidity)

5. Zoom Speed

3.5 ± 0.5 sec (W to T, room temperature, new batteries, horizontal lens)
Second step: 1.6 ± 0.5 sec (W to T, room temperature, new batteries, horizontal lens)

6. Focus Speed

0.5 sec or faster (during AF, ∞ to 1.2 m, room temperature, new batteries, horizontal lens)
2.0 ±0.5 sec (1st step)(during PF at W end, ∞ to 1.2 m, room temperature, new batteries, horizontal lens)
1.0 ±0.5 sec (2nd step)(during PF at T end, ∞ to 1.2 m, room temperature, new batteries, horizontal lens)

7. Film Winding

Winding speed: 300 ms or less (normal room temperature and humidity, new batteries, 12th frame of a roll of Neopan SS 24EX)
Continuous winding: 2.3 ±0.3 frames/sec. (PF mode, 1/2000 (manual), room temperature, new batteries, Neopan SS 24EX)

8. Film rewinding

Rewinding speed: 14 seconds or less (normal room temperature and humidity, new batteries, Neopan SS 24EX)

9. Light Metering

1) Fuzzy ESP metering (program mode)
   - Metering range: LV3 to LV20
   - Display accuracy: LV3 to less than LV6 0 ±1.0 EV
     LV6 to less than LV11 0 ±0.5 EV (compensation provided at LV11 or more
   - * Lens must be in ∞ position
   - Difference between average metering and ESP metering: LV3 to less than LV11 0 ±0.5 EV
   - Display flickering under a fluorescent light: 0.5 steps or less for both aperture and shutter speed (± compensation measured at 0)

2) Average metering (aperture priority, shutter priority, or manual exposure mode)
   - Metering range: LV3 to LV20
   - Display accuracy: LV3 to less than LV6 0 ±1.0 EV
     LV6 to LV20 0 ±0.5 EV
   - Display flickering under a fluorescent light: 0.5 steps or less for shutter speed (± compensation measured at 0)

3) Spot metering
   - Metering range: LV4 to LV17
   - Display accuracy: LV4 to less than LV6 $0\ ^{+1.2}_{-1.0}$ EV
     LV6 to less than LV15 0 ±0.5 EV
     LV15 to LV17 0 ±1 EV
   - Difference between ESP metering and spot metering: LV6 to LV11 0 ±1 EV
   - Difference between average metering and spot metering: LV6 to LV17 0 ±1 EV

10. Exposure Accuracy

①Program mode

LV	Accuracy (EV)
15	0 ± 1
11	0 ± 1
7	0 ± 1
5	0 ± 1.5
4	0 ± 1.5

ISO 100, K = 1.3
Zoom position: Tele end, wide end
Focus: ∞
* Repeat 10 times, each data must be within standard.

②Aperture priority mode

LV	Accuracy (EV)
15	0 ± 1
11	0 ± 1
7	0 ± 1
4	0 ± 1.5

ISO 100, K = 1.3
Zoom position: Tele end, wide end
Focus: ∞
Aperture value display: F8
* Repeat 10 times, each data must be within standard.

③Spot metering

LV	Accuracy (EV)
15	0 ± 1.5
11	0 ± 1
7	0 ± 1
4	0 ± 1.5

ISO 100, K = 1.3, aperture priority mode
Zoom position: Tele end, wide end
Focus: ∞
Aperture value display: F8
* Repeat 10 times, each data must be within standard.

④Shutter priority mode

LV	LV	Accuracy (EV)
15	15	0 ± 1.5
11	11	0 ± 1
7	7	0 ± 1
4	4	0 ± 1.5

ISO 100, K = 1.3, shutter priority mode Zoom position: Tele end, wide end Focus: ∞
* Repeat 10 times, each data must be within standard.

11. ISO Selection Accuracy

ISO	EV	Accuracy (EV)
5000	16 1/3	0 ± 0.5
3200	16	0 ± 0.5
1600	15	0 ± 0.5
800	14	0 ± 0.5
400	13	0 ± 0.5
200	12	0 ± 0.5
100	11	0 (Reference)
50	10	0 ± 0.5
25	9	0 ± 0.5

K = 1.3, aperture priority mode, LV11
Zoom position: Tele end
Focus: ∞
Aperture value display: F8
* ISO levels are set at intervals of 0.6 EV or more.

12. Current Consumption

①Leakage current: 5 uA or less (power switch OFF)
②Standby current: 700 uA or less (power switch ON, display OFF)
③When LCD is active: 150 mA or less
④During auto loading: Average 600 mA or less
⑤During winding and shutter charge: Average 1300 mA or less } With Neopan SS 24EX
⑥During rewinding: Average 550 mA or less
⑦During Zoom operation: Average 650 mA or less
⑧During AF operation: Average 350 mA or less } With lens in horizontal position
⑨During AF illuminator operation: Average 400 mA or less(includes self timer operating time)

13. Battery Check

Warning voltage: 4.5 5V ± 0.15 V (25° C)
" ⊂⊐ " indicator will flash on the external LCD panel.
Lock voltage: 4.20 V ± 0.15 V (25° C)
" ⊂⊐ " indicator will light up on the external LCD panel.

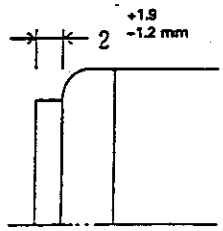
14. Light Leakage

Light must not leak under the following conditions:
1 20000 Lux for 40 minutes
2 Direct sunlight for 60 minutes (10 min x six sides), with lens cap on
* ISO 100, wide, tele, barrel closed

15. LCD

Display time: 25^{+10}_{-5} seconds (Note, this time should be extended by 5 ±1 minutes when the back cover is open or the flash is up.,18 ±2 minutes when using the self-timer or Remote control)

16. Amount of Protrusion at Tip of Frame When Barrel is Down



17. Vignetting, distortion (x 1/50, 0.45 d)

	Vignetting	Distortion
W:	-1.25 EV	-1.03%
T :	-0.72 EV	-0.80%

C. DISASSEMBLY PROCEDURES

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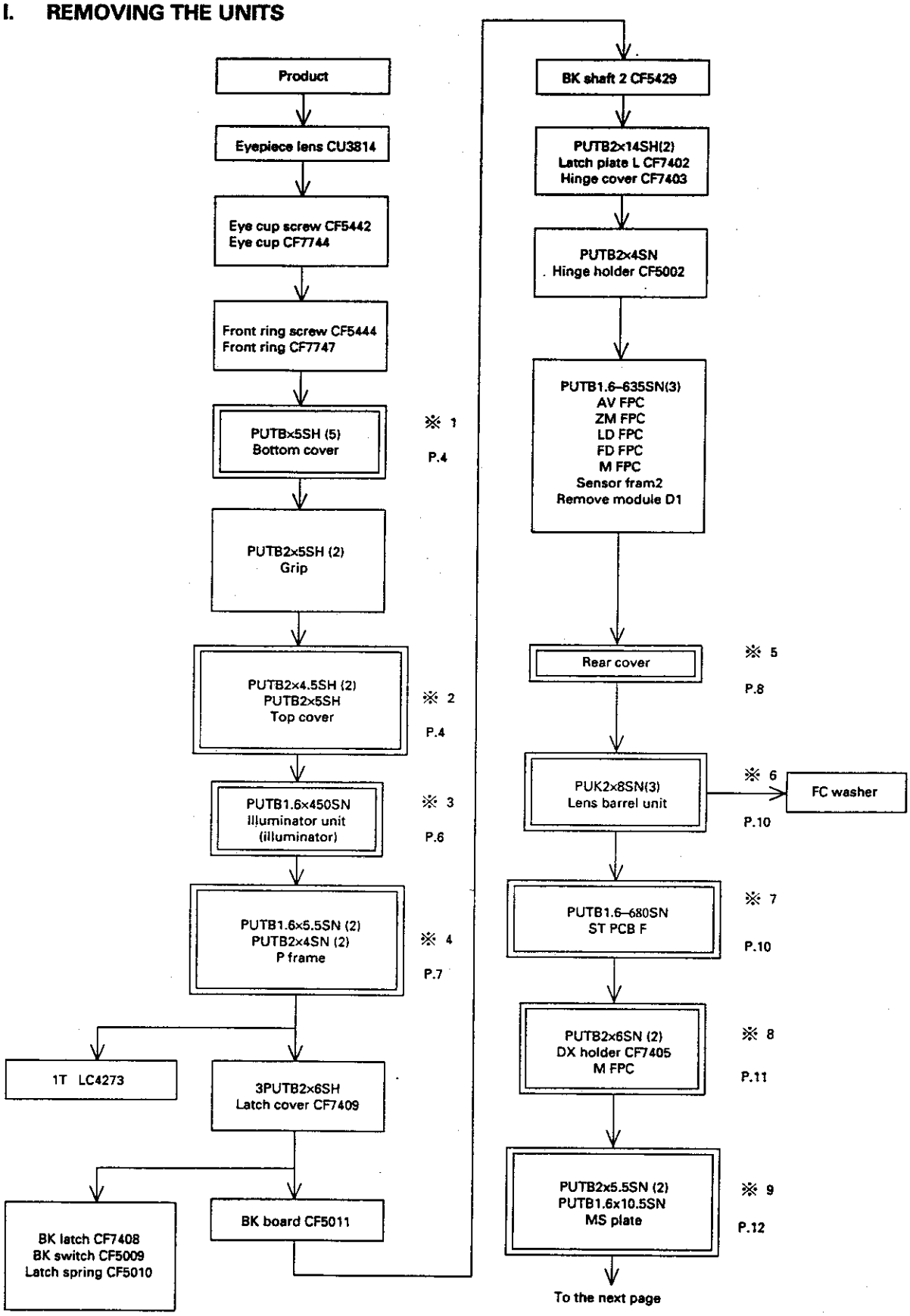
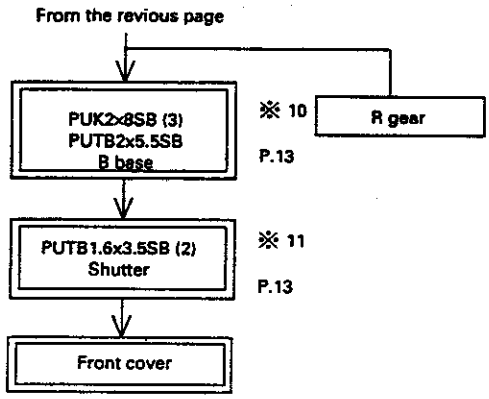
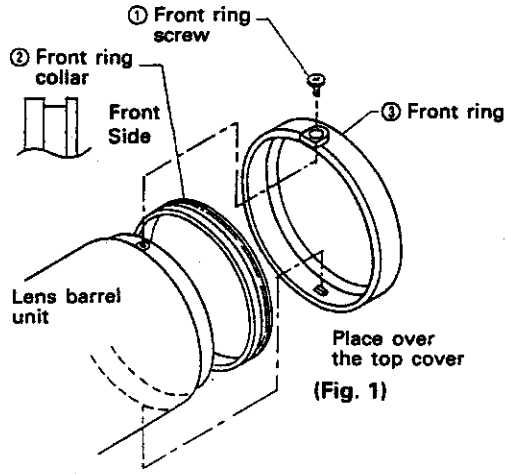
C. DISASSEMBLY PROCEDURES

I. REMOVING THE UNITS




From the revious page
PUK2×8SB (3)
PUTB2x5.5SB
B base
※ 10
R gear
P.13
PUTB1.6x3.5SB (2)
Shutter
※ 11
P.13
Front cover

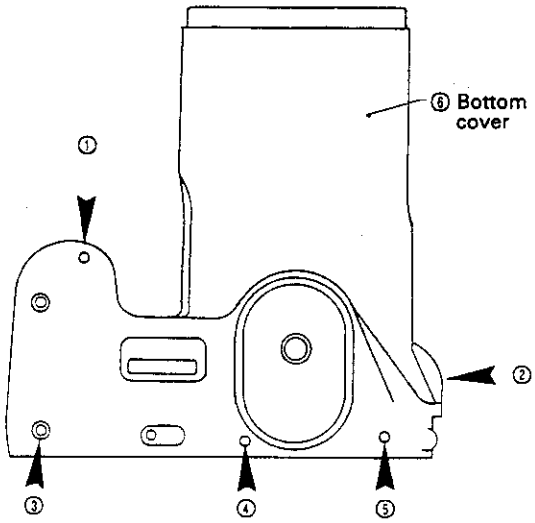
※1. Removing the bottom cover



(Fig. 1)

Parts to be removed	Qty.	Removed parts
● Remove ① Front ring screw CF5444	1	② Front ring collar CF7765 ③ Front ring CF7747

(Fig1)

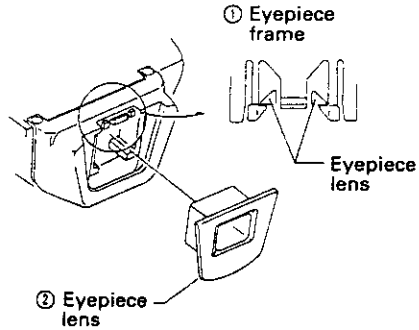


(Fig. 2)

Parts to be removed	Qty.	Removed parts
● Remove ① to ⑤ PUTB2x5SH	5	⑥ Bottom cover CF4495

(Fig2)

※2. Removing the top cover



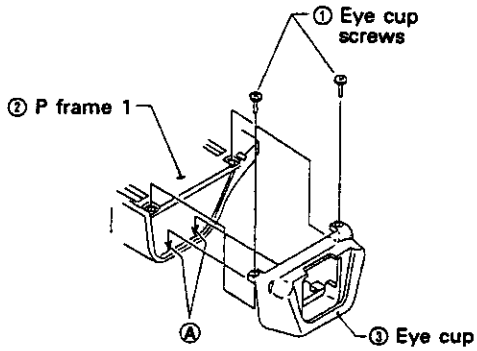
(Fig. 3)

Parts to remove first	Refer to page

★ Remove the bottom cover first.

Parts to be removed	Qty.	Removed parts
● Remove ② eyepiece lens CU3814 by moving it out from under the tabs of the ① eyepiece frame CU3799.		② Eyepiece lens CU3814

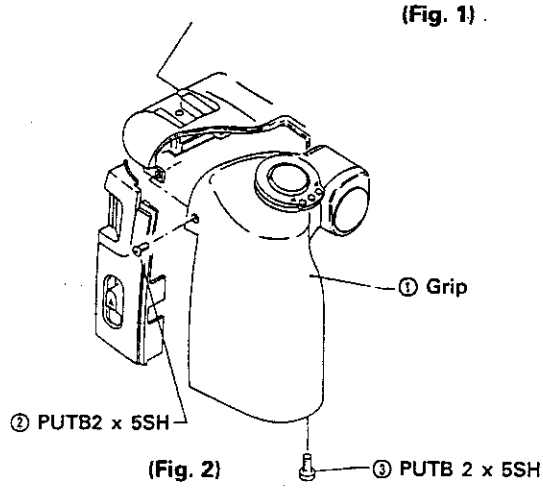
(Fig3)



(Fig. 1)

Parts to be removed	Qty.	Removed parts
● Remove ① eye cup screws CF5442.	2	③ Eye cup CF7744

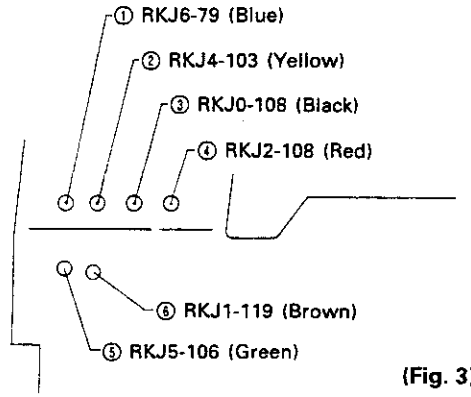
(Fig1)



(Fig. 2)

Parts to be removed	Qty.	Removed parts
● Remove ② PUTB2 x 5SH.	1	
● Remove ③ PUTB2 x 5SH.	1	

(Fig2)



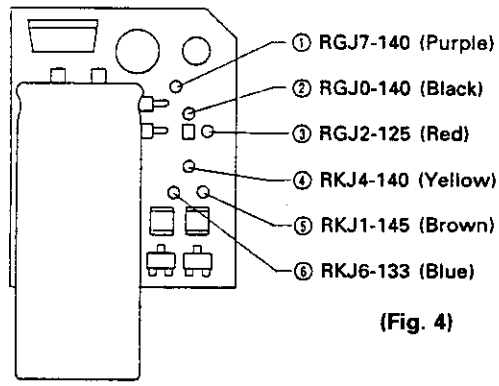
(Fig. 3)

- Remove the following parts:
  ① RKJ6-97 (Blue)
  ② RKJ4-103 (Yellow)
  ③ RKJ0-108 (Black)
  ④ RKJ2-108 (Red)
  ⑤ RKJ5-106 (Green)
  ⑥ RKJ1-119 (Brown)

(Fig3)

- Remove ① grip CU4509.

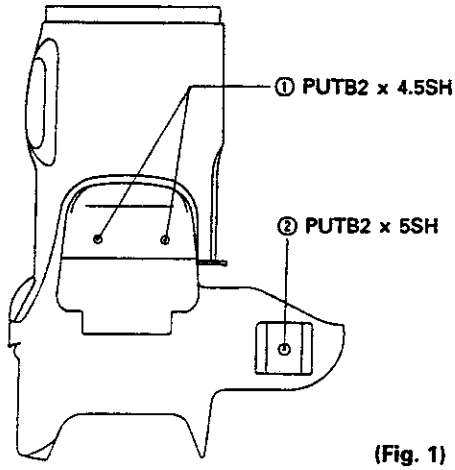
※ Discharge the ⑥ main capacitor first.



(Fig. 4)

Parts to be removed	Qty.	Removed parts
① RGJ7-140 (Purple)	1	
② RGJ0-140 (Black)	1	
③ RGJ2-125 (Red)	1	
④ RKJ4-140 (Yellow)	1	
⑤ RKJ1-145 (Brown)	1	
⑥ RKJ6-133 (Blue)	1	

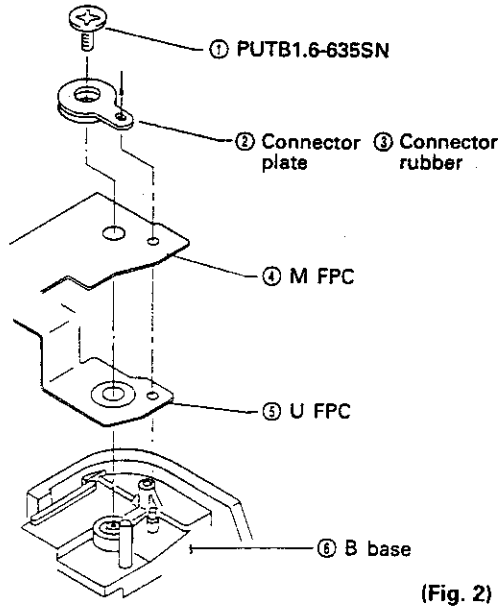
(Fig4)



(Fig. 1)

Parts to be removed	Qty.	Removed parts
● Remove ① PUTB2 x 4.5SH.	2	
● Remove ②PUTB2 x 5SH.	1	
● Note that the lead FPC is still connected when removing the top cover.		

(Fig1)

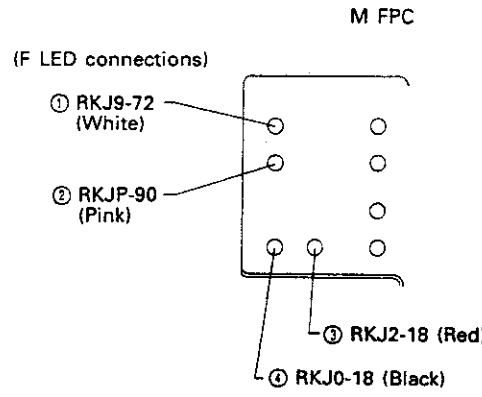


(Fig. 2)

Parts to remove first	Refer to page	
● Remove ① PUTB1.6-635SN.	1	② Connector plate CF5343 ③ Connector rubber CF5384 Top cover
● Remove ④ M FPC CU4514, ⑤ U FPC CF4489		

(Fig2)

※3. Removing the AF illuminator

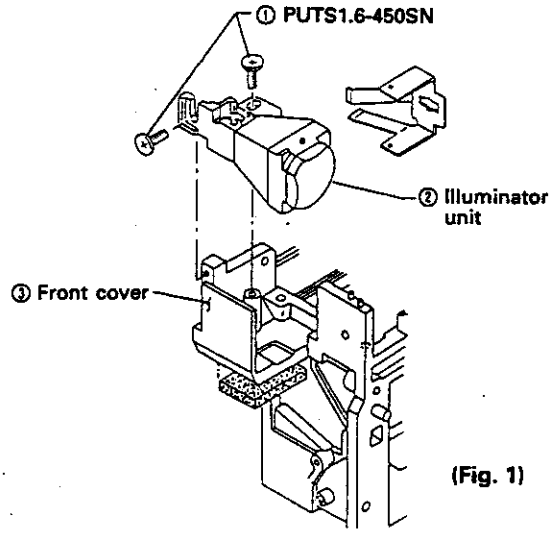


(Fig. 3)

Parts to remove first	Removed parts
★ Remove the following:	
Bottom cover	C-4
Eyepiece lens	C-4
Eye cup	C-5
Grip	C-5
Top cover	C-5

Parts to be removed	Qty.	Removed parts
● Remove lead wires ① to ④.		

(Fig3)



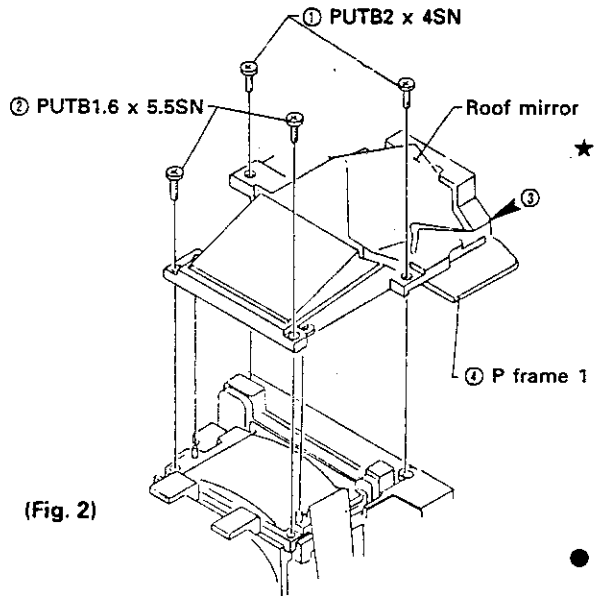
(Fig. 1)

Parts to be removed	Qty.	Removed parts
● Remove ① PUTS1.6-450SN. ● Remove ② AF illuminator unit CU4276.		② Illuminator unit CU4276

(Fig1)

※ The AF illuminator has been positioned. Do not remove unless absolutely necessary (i.e., malfunctions, etc.).

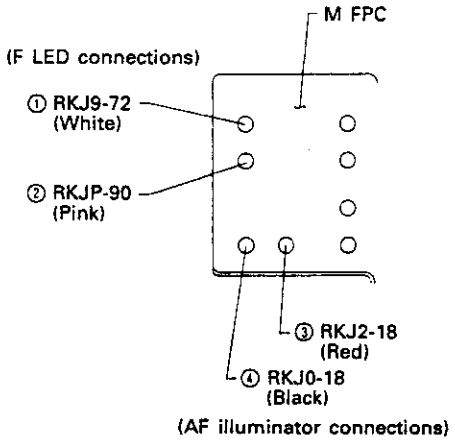
※4. Removing the P Frame 1



(Fig. 2)

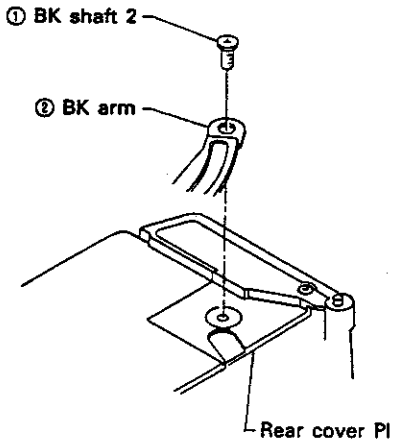
Parts to remove first	Refer to page
★ Remove the following:	
Bottom cover	C - 4
Eyepiece lens	C - 4
Eye cup	C - 5
Grip	C - 5
Top cover	C - 5

Parts to remove first	Qty.	Removed parts
● Remove ③ AE shielded wire.		(Fig2)
● Remove ① RKJ9-72 (White), ② RKJP-90 (Plink)		(Fig3)
● ① PUTB2 x 4SN ② PUTB1.6 x 8SN	2 2	(Fig2)
● Remove ④ P Frame 1 CU4493		(Fig2)



(Fig. 3)

※5. Removing the rear cover

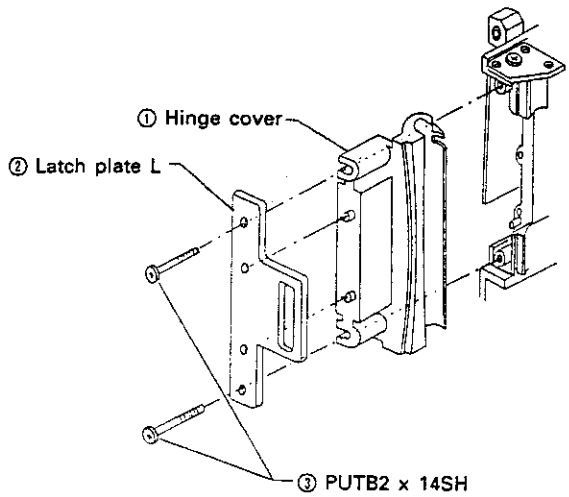


(Fig. 1)

Parts to remove first	Qty.	Refer to page
★ Remove the following:		
Bottom cover	C-4	
Eyepiece lens	C-4	
Eye cup	C-5	
Grip	C-5	
Top cover	C-5	

Parts to be removed	Qty.	Removed parts
● Remove ① BK shaft 2 CF5429	1	

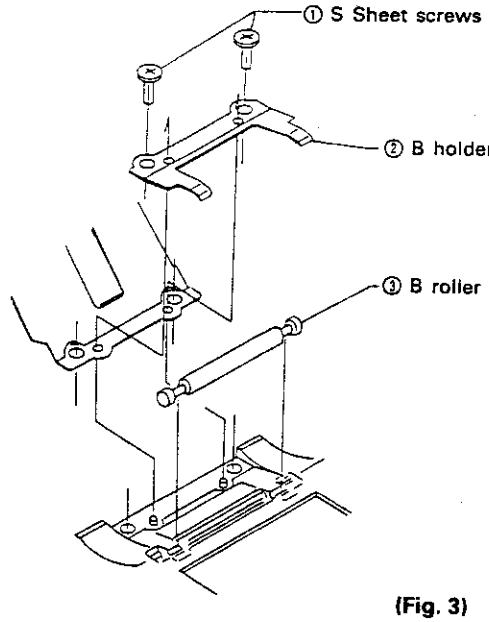
(Fig1)



(Fig. 2)

Parts to be removed	Qty.	Removed parts
● Remove ③PUTB2 x 14SH. ● Remove the following: ① Hinge cover CF7403 ② Latch plate L CF7402	2	① Hinge cover CF7403 ② Latch plate L CF7402

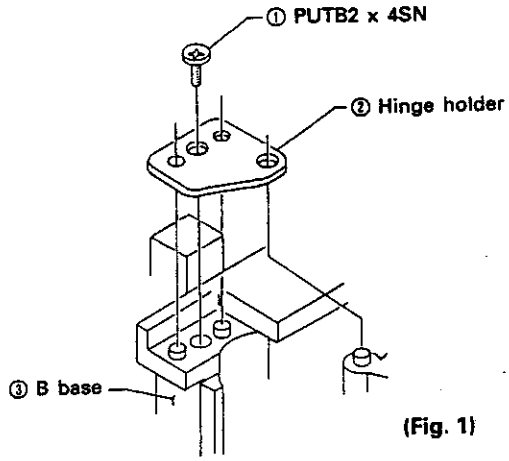
(Fig2)



(Fig. 3)

Parts to be removed	Qty.	Removed parts
● Remove ① S sheet screws CF5443.	2	② B Holder CF5007 ③ B Roller CF5006

(Fig3)



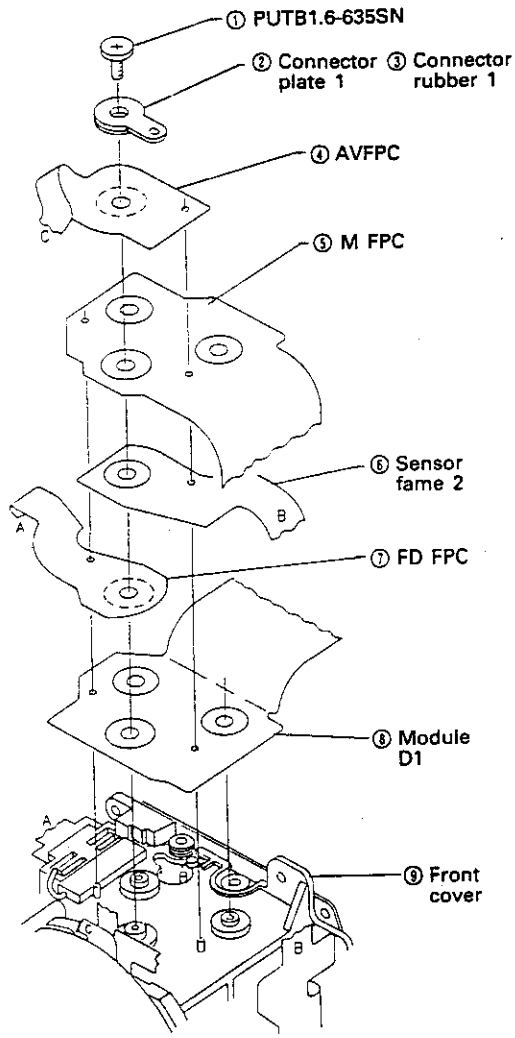
(Fig. 1)

Parts to be removed	Qty.	Removed parts
● Remove ①PUTB2 x 4SN.	1	② Hinge holder CF5002
● Remove ② Hinge holder CF5002.	1	

(Fig1)

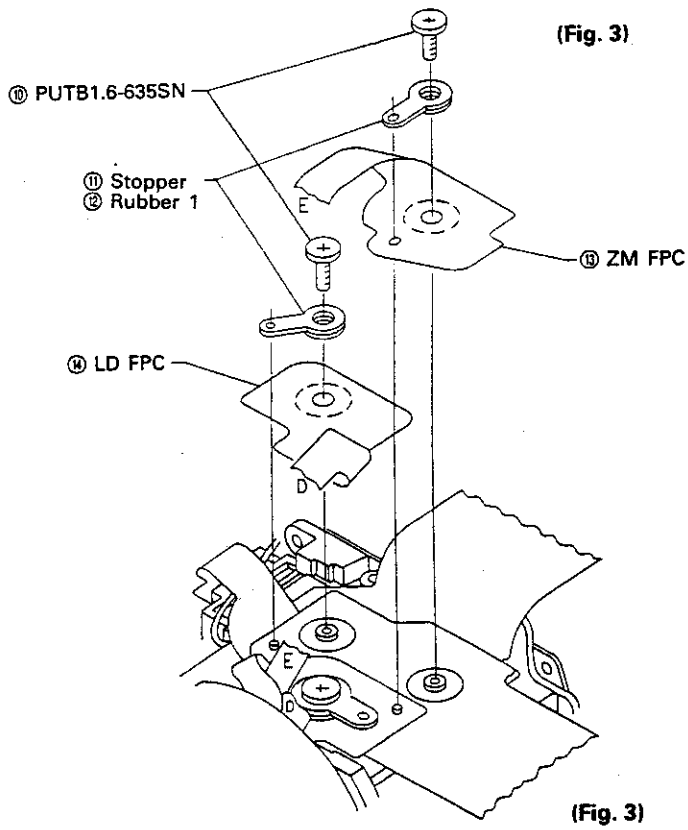
Parts to remove first	Removed parts
● Remove the following: ⑩ PUTB1.6-635SN 2 ⑪ STOPPER CF3430 2 ⑫ RUBBER 1 CF3429 2	④ AV FPC CF7660 ⑤ M FPC CU4514 ⑥ Sensor frame 2 CU4503
● Remove the following: ① PUTB1.6-635SN 1 ② Connector plate 1 CF5383 1 ③ Connector rubber 1 CF5384 1	⑦ FD FPC CU4286 ⑧ Module D1 CU4547 ⑬ ZM FPC CU7630 ⑭ LD FPC CU7631
● Remove the FPC.	Rear cover

(Fig2)



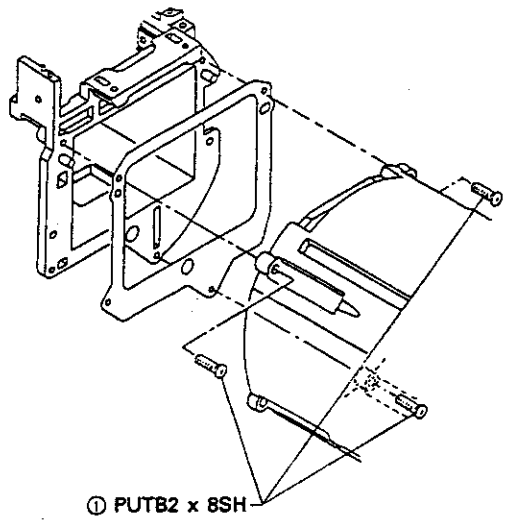
(Fig. 2)

(Fig. 3)



(Fig. 3)

※6. Removing the Lens barrel unit

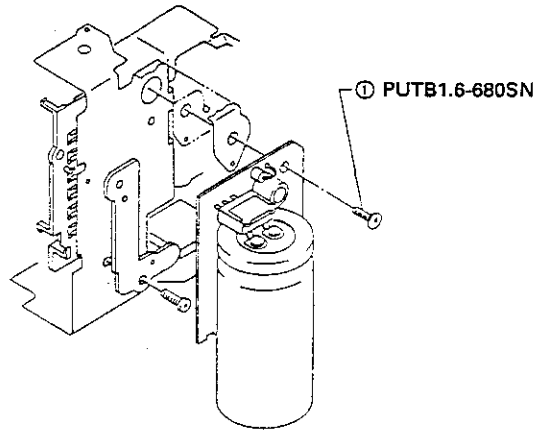


(Fig. 1)

Parts to be removed		Removed parts
● Remove ① PUTB2 x 8SH	1	Lens barrel

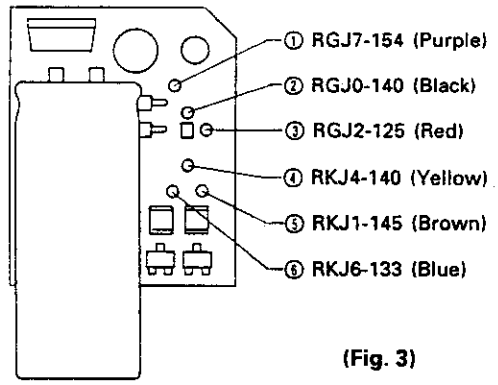
(Fig1)

※7. Removing the ST PCB F



(Fig. 2)

Parts to remove first	Refer to page
★ Remove the following:	
Eyepiece lens	C - 4
Eye cup	C - 4
Grip	C - 5
Top cover	C - 5
	C - 5



(Fig. 3)

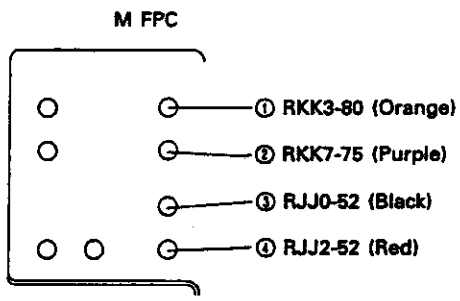
Parts to be removed	Qty.	Removed parts
● Remove ① PUTB1.6-680SN.	1	ST PCB F

(Fig2)

● Remove the following:
① RGJ7-154 (Purple)
② RGJ0-140 (Black)
③ RGJ2-125 (Red)
④ RKJ4-140 (Yellow)
⑤ RKJ1-145 (Brown)
⑥ RKJ6-133 (Blue)

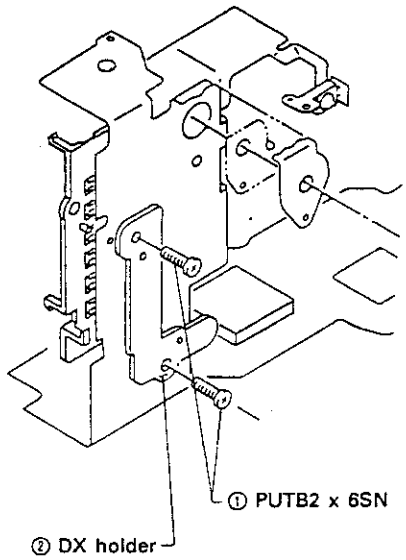
(Fig3)

※8. Remove the M FPC



(Fig. 1)

Parts to remove first	Refer to page
★ Bottom cover	C - 4
Eyepiece lens	C - 4
Eye cup	C - 5
Grip	C - 5
Top cover	C - 5
Module D1 connector	C - 9
ST PCB F	C - 10



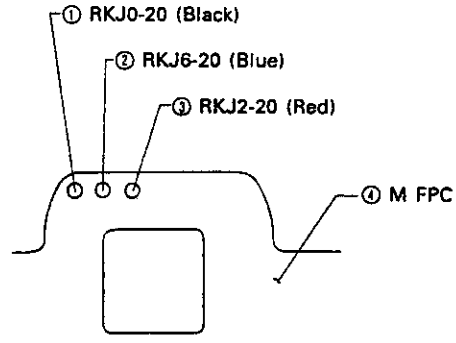
(Fig. 2)

Parts to be removed	Qty.	Removed parts
● Remove the following:		
① RKK3-80 (ORANGE)	1	
② RKK7-75 (PURPLE)	1	
③ RJJ0-52 (BLACK)	1	
④ RJJ2-52 (RED)	1	

(Fig1)

Parts to be removed	Qty.	Removed parts
● Remove ① PUTB2 x 6SN	2	② DX Holder CF7405

(Fig2)

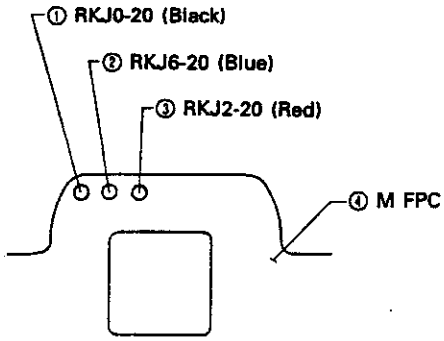


(Fig. 3)

Parts to be removed	Qty.	Removed parts
● Remove the following:		4 M FPC CU4514
① RKJ0-20 (BLACK)	1	
② RKJ6-20 (BLUE)	1	
③ RKJ2-20 (RED)	1	

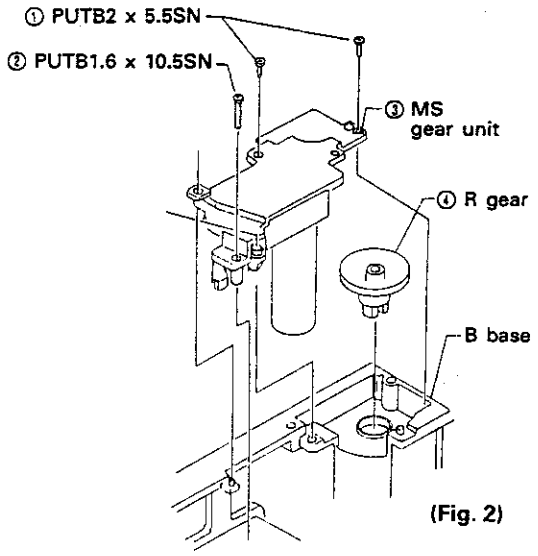
(Fig3)

※9. Removing the MS Plate



(Fig. 1)

Parts to remove first	Refer to page
★ Bottom cover	C - 4
Eyepiece lens	C - 4
Eye cup	C - 5
Grip	C - 5
Top cover	C - 5
Module D1 connector	C - 9
M FPC lead wires	C - 11

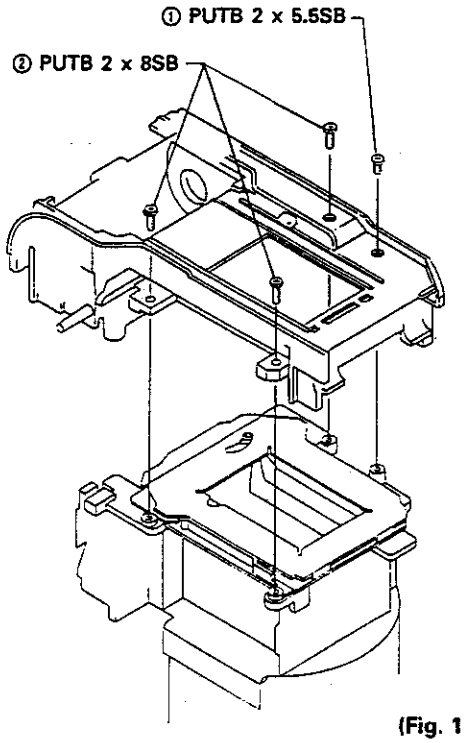


(Fig. 2)

Front cover

Parts to be removed	Qty.	Removed parts
● Remove ① PUTB2 x 5.5SN.	2	④ R gear CU3770 (Fig1)
● Remove ② PUTB1.6 x 10.5SN.	1	③ MS Gear Unit (Fig2)
● Remove ③ MS gear unit.		

※10. Removing the B Base



(Fig. 1)

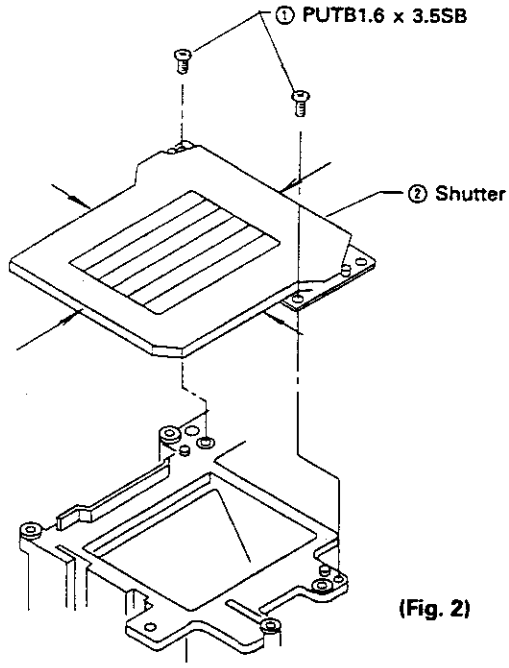
Parts to remove first	Refer to page
★ Bottom cover	C - 4
Eyepiece lens	C - 4
Eye cup	C - 5
Grip	C - 5
Top cover	C - 5
Rear cover	C - 7
ST PCB F	C - 10
M PCB	C - 11
MS Plate	C - 12

Parts to be removed	Qty.	Removed parts
● Remove the following:		B Base
① PUTB2x5.5SB	1	
② PUTB2x8SB	3	

(Fig1)

※11. Removing the shutter

※ Do not touch the shutter curtain with your bare hands.



(Fig. 2)

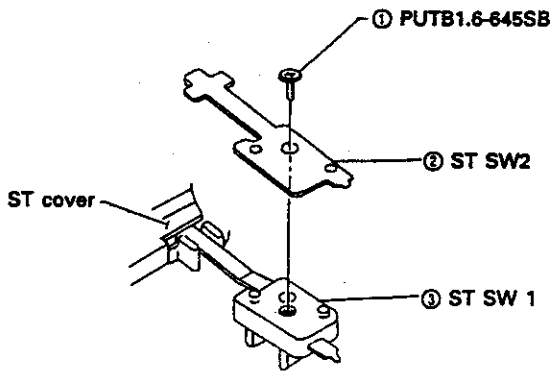
Parts to remove first	Refer to page
★ Bottom cover	C - 4
Eyepiece lens	C - 4
Eye cup	C - 5
Grip	C - 5
Top cover	C - 5
Rear cover	C - 7
ST PCB F	C - 10
M FPC	C - 11
MS Plate	C - 12
B Base	C - 13

Parts to be removed	Qty.	Removed parts
● Remove ① PUTB1.6 x 3.5SB.		SHUTTER CU3820

(Fig2)

II. DISASSEMBLING THE UNITS

1. Disassembling the top cover (removing the flash unit)

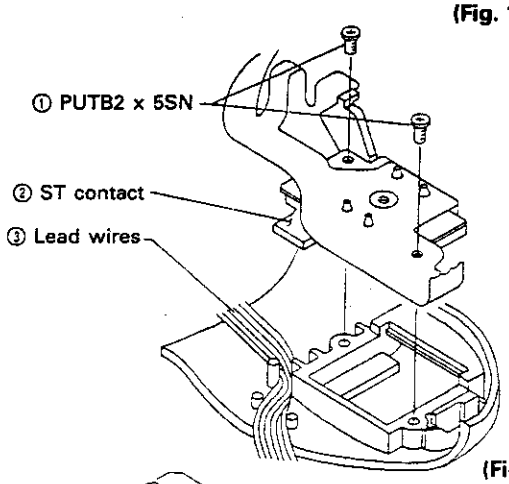


(Fig. 1)

Parts to be removed	Qty.	Removed parts
● Remove ① PUTB1.6 -645SB	1	② ST contact CU3869 Shoe plate CF5469

(Fig1)

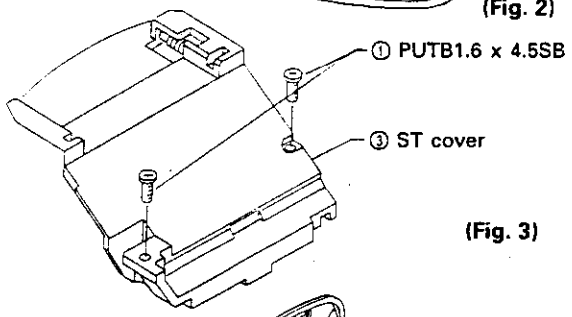
※Avoid deforming ST Switch 1 and 2.



(Fig. 2)

Parts to be removed	Qty.	Removed parts
● Remove ① PUTB2 x 5SN Remove ● ③ Lead wires	2	② ST contact CU3869

(Fig2)



(Fig. 3)

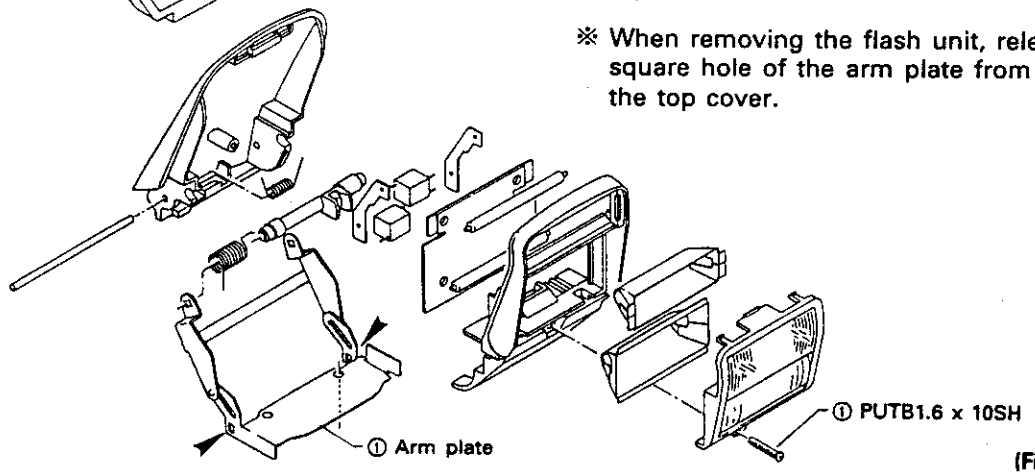
Parts to be removed	Qty.	Removed parts
● Remove ①PUTB1.6 X 4.5SB	2	ST case CF7461 ST cover CF7475 ST arm CU4486 Arm plate CF7471

(Fig3)

※ Pop up the flash. The entire flash emitting unit can be removed from the front.

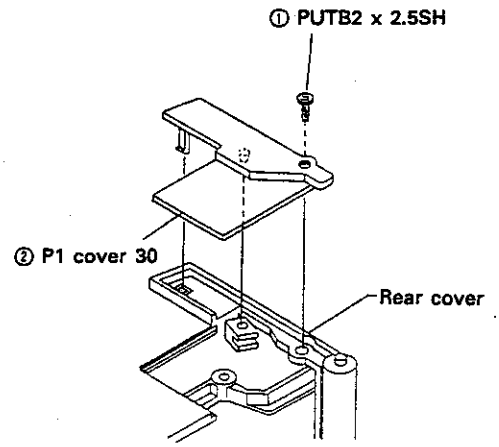
※ When removing the flash unit, release the square hole of the arm plate from the tab on the top cover.

(Fig4)



(Fig. 4)

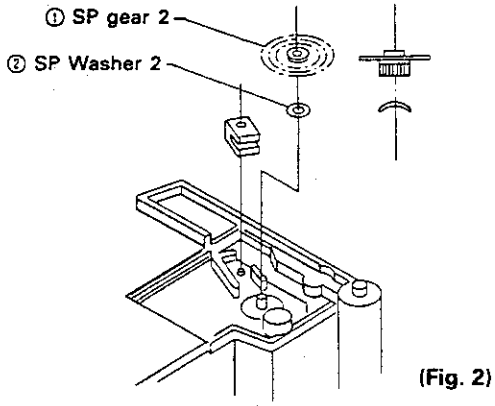
2. Disassembling the rear cover



(Fig. 1)

Parts to be removed	Qty.	Removed parts
● Remove ① PUTB2 x 2.5SH	1	② PI cover CF7706

(Fig1)

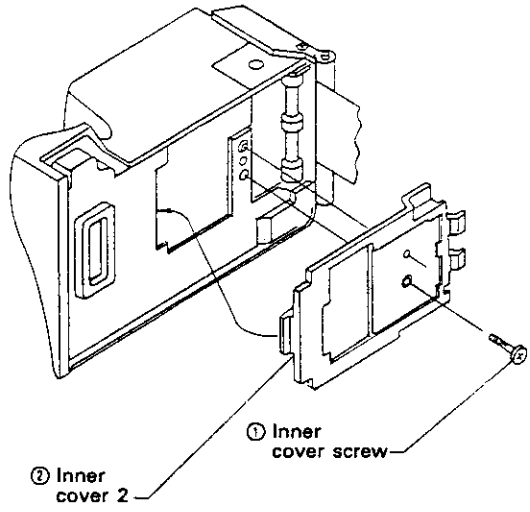


(Fig. 2)

Parts to be removed	Qty.	Removed parts
● Remove ① SP gear 2 CF5035. ● Remove ② SP Washer 2 CF6821		

(Fig2)

Parts to be removed	Qty.	Removed parts
● Remove ① Inner cover screw CF6811. ● Lift 2 Inner cover ② CU4258 up on the spool side and take out by releasing it from the tab.	1	② Inner cover 2 CU4258

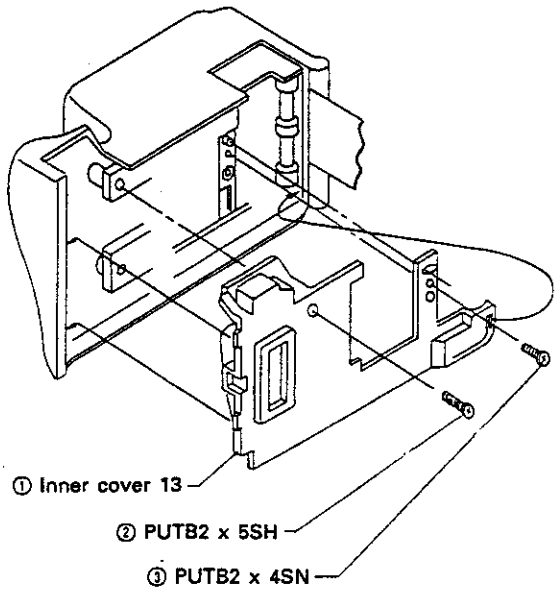


(Fig. 3)

* The ① inner cover screw can be removed from the hole in the pressure plate.

※ To remove torn film stuck inside the camera The film can be pulled out by removing the ① Inner cover screw and ② Inner cover 2.

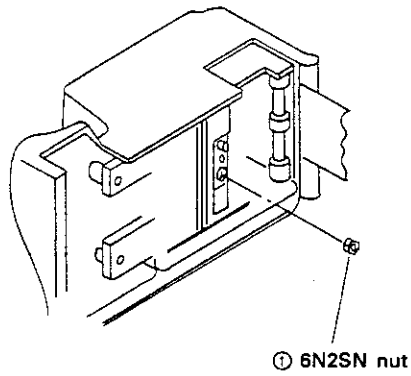
(Fig3)



(Fig. 1)

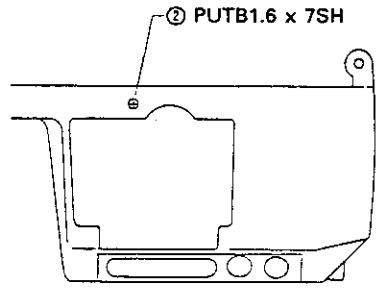
Parts to be removed	Qty.	Removed parts
● Remove the following: ② PUTB2 x 5SH ③ PUTB2 x 4SN	1	① Inner cover 13 CU4465
● Move cover away from tab and lift up on the P window side. Remove ① inner cover 13 CU4465 as though removing the spool side.		

(Fig1)



Parts to be removed	Qty.	Removed parts
● Removing the following: ① 6N2SN nut ② PUTB1.6 X 7SH	1 1	
● Leave the D cover 30 open.		

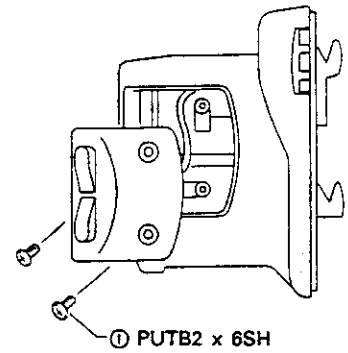
(Fig2)



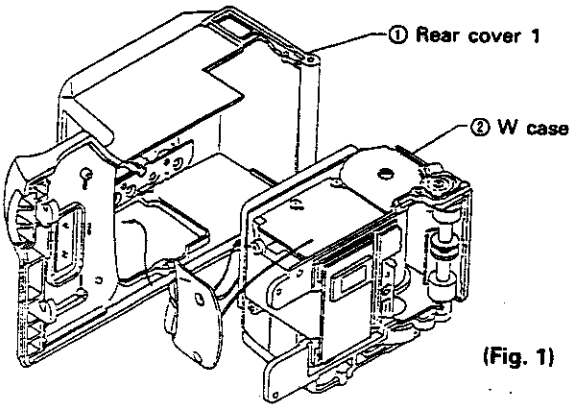
(Fig. 2)

Parts to be removed	Qty.	Removed parts
● Remove ① PUTB2 x 6SH.	1	

(Fig3)



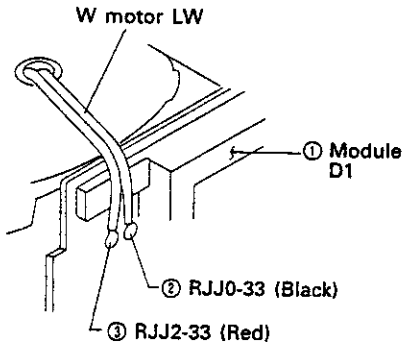
(Fig. 3)



(Fig. 1)

Parts to be removed	Qty.	Removed parts
● Draw ① Rear cover 1 CU4462 out of ② W case CF6804.		D cover 30 CU4473 B cover shaft CF6816 FD rubber CF7707 FD button CF7708 MH rubber CF7709 MH button CF7710

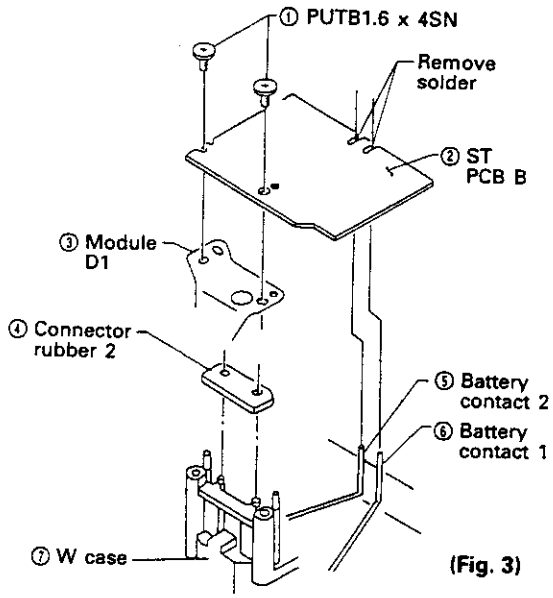
(Fig1)



(Fig. 2)

Parts to be removed	Qty.	Removed parts
● Remove the following: ② RJJ0-33 (BLACK) ③ RJJ2-33 (RED)	 1 1	

(Fig2)

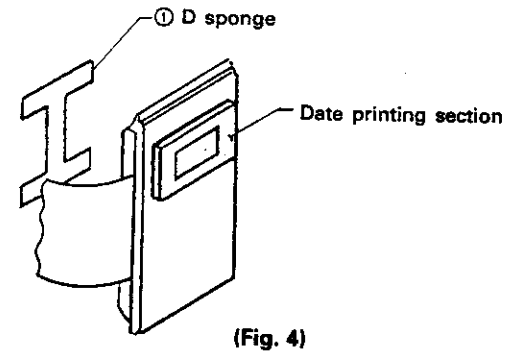


(Fig. 3)

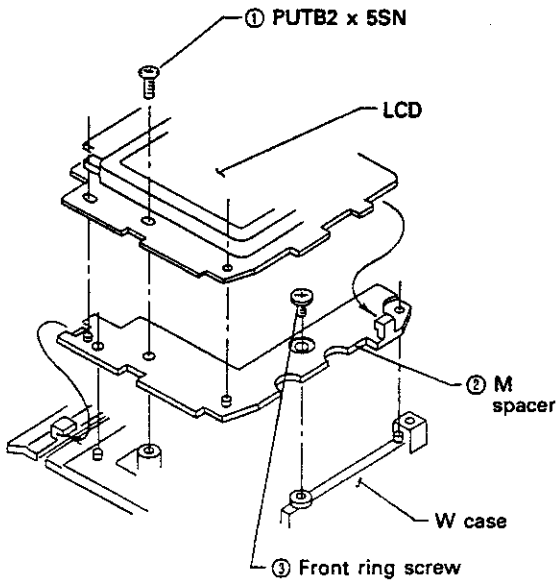
Parts to be removed	Qty.	Removed parts
● Remove ① PUTB1.6 x 4SN ● Remove solder from: ⑥ Battery contact 2 CF6814 ⑦ Battery contact 1 CF6813 ● Lift up the date printing section and peel the ① D sponge CF5416.		② ST PCB B CU4468 ④ Connector rubber 2 CF5386 ⑤ Battery contact 2 CF6814 ⑥ Battery contact 1 CF6813

(Fig3)

(Fig4)



(Fig. 4)

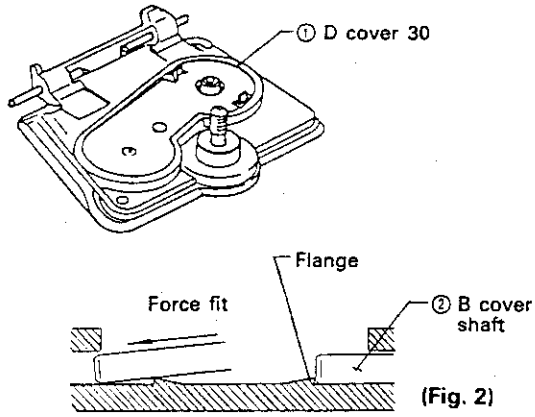


(Fig. 1)

Parts to be removed	Qty.	Removed parts
● Remove ① PUTB2 x5SN. ● Remove the LCD board from the W case away from the tabs. ● Remove ③ Front ring screw CF5444.	1	② M Spacer CF7716 Module D1 CU4547

(Fig1)

※ **When only replacing the battery cover**

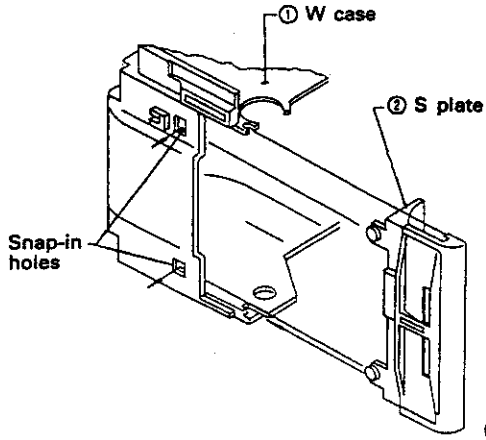


(Fig. 2)

- Cut the flange off of ① D cover 30 CU4473.
- Take ② B cover shaft CF6816 off by pulling inwards
- Install the new D cover 30 CU4473.
- Force fit ② B cover shaft CF6816.
- Apply cement between flange of ① D cover 30 CU4473 and ② B cover shaft CF6816.

(Fig2)

3. Disassembling the wind up unit

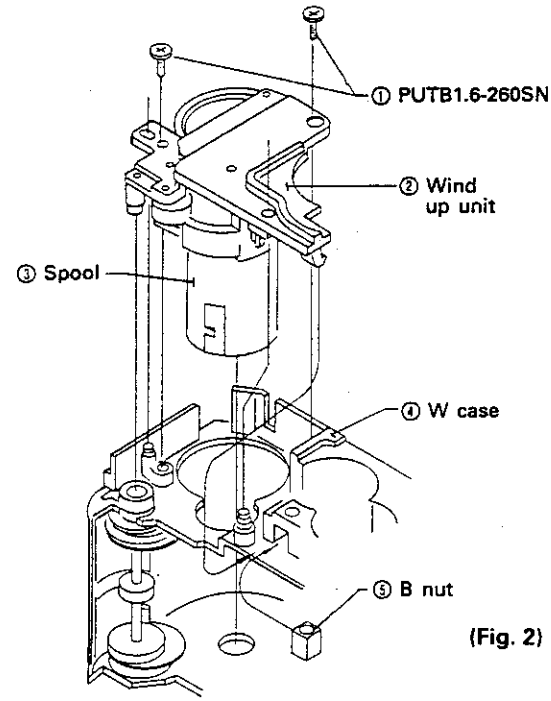


(Fig. 1)

Parts to be removed	Qty.	Removed parts

- Remove ② S Plate 2 CF6805, which is snapped in place.

(Fig1)

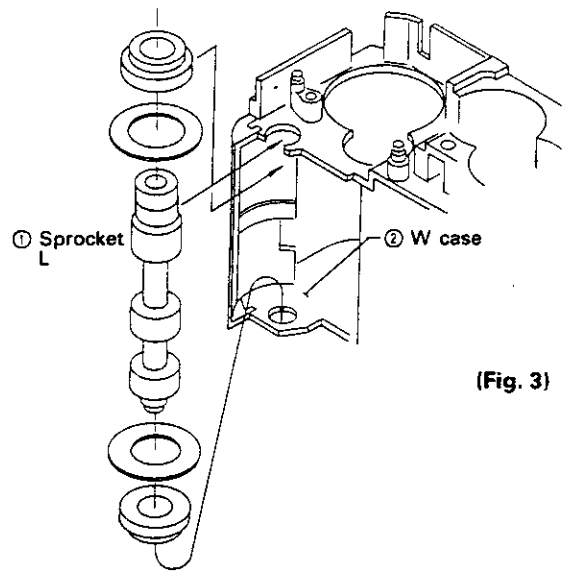


(Fig. 2)

Parts to be removed	Qty.	Removed parts
● Remove ① PUTB1.6 -260SN. ● Pull ② wind up unit out from bottom of ④ W CASE CF6804. ● Remove ③ spool CF5028 covering the W motor.	2	⑤ B Nut CF5411 ② Wind up gear unit

(Fig2)

※When disassembling, be careful not to lose ⑤ the B NUT CF5411.



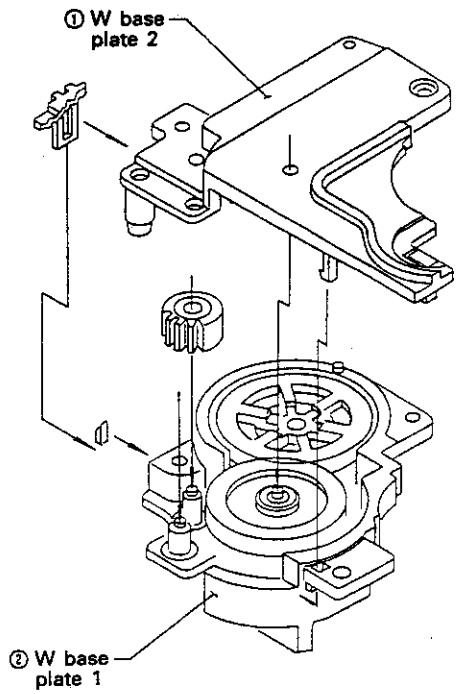
(Fig. 3)

Parts to be removed	Qty.	Removed parts

- Remove ① sprocket L CF6803 from ② W case.

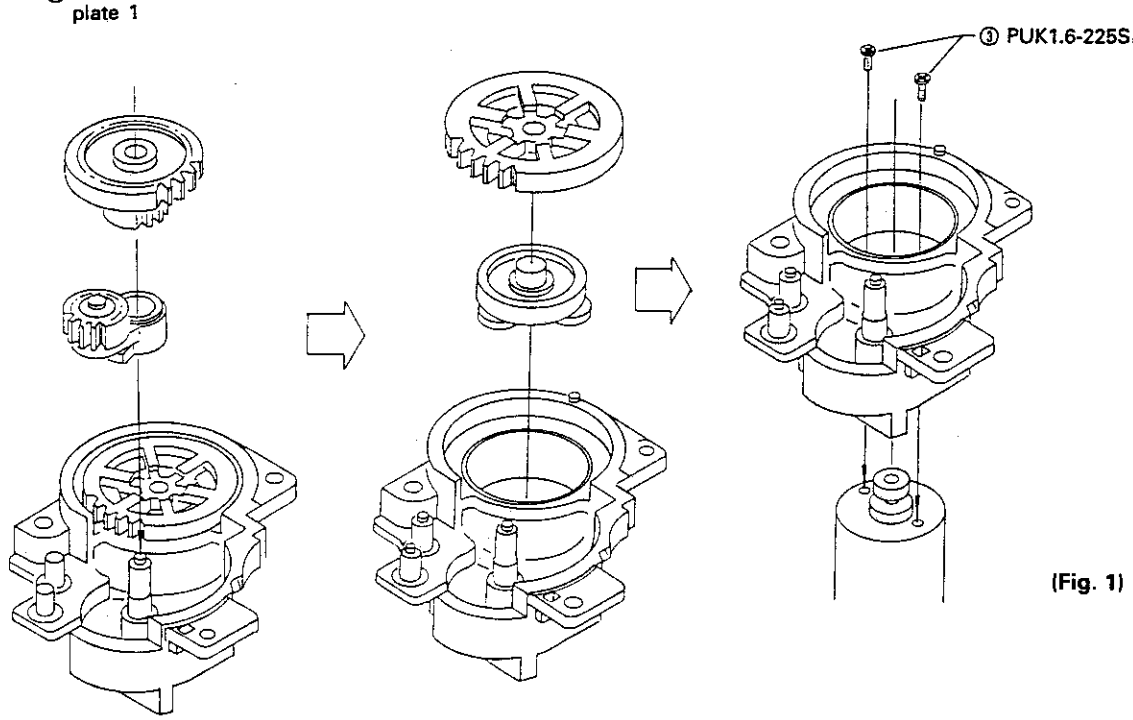
(Fig3)

※ When removing sprocket L, take out the larger end first and the smaller end last.



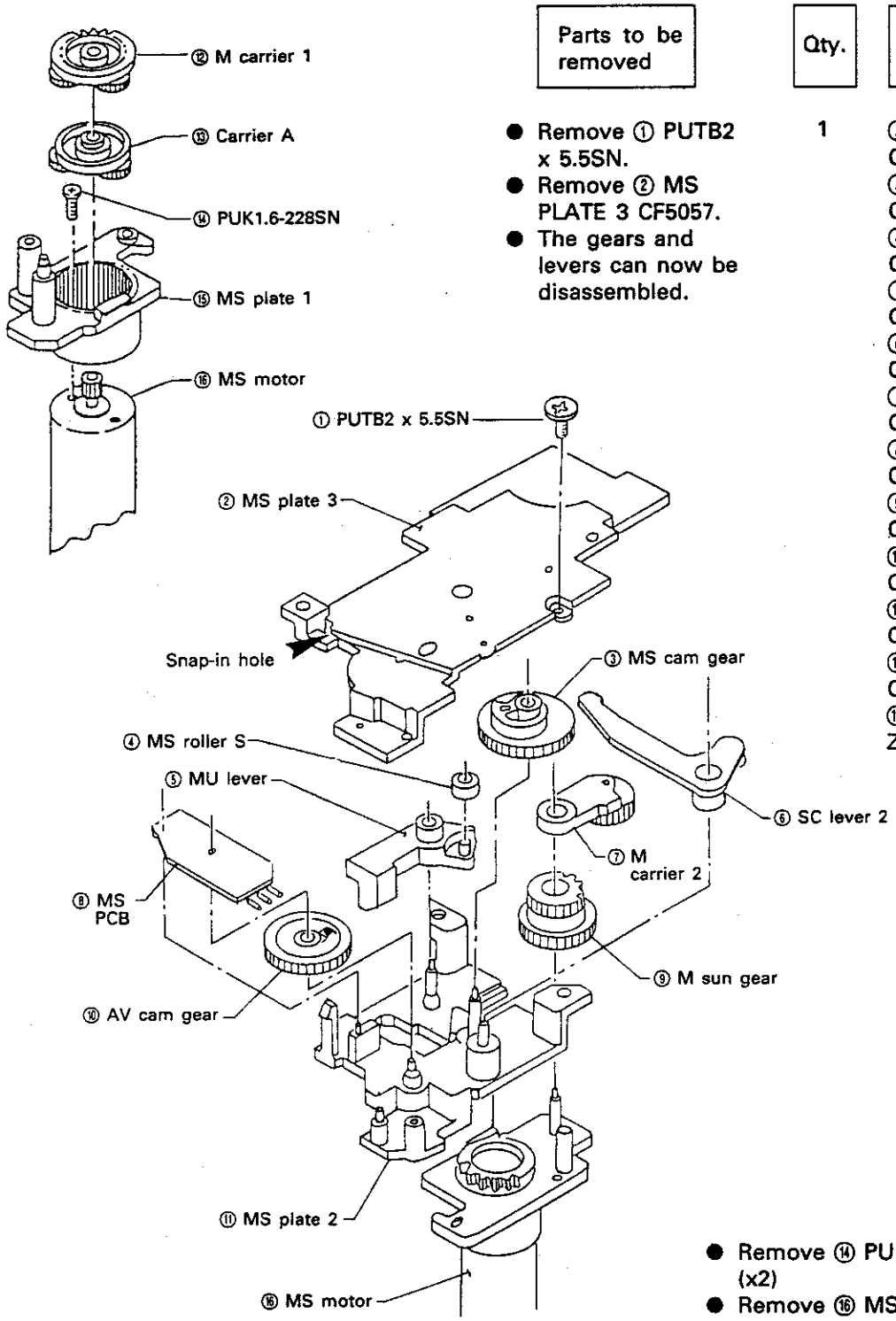
Parts to be removed	Qty.	Removed parts
● Remove ① W base plate 2 CF6802, where it is snapped into place (two places). ● Remove the gear from ② W base plate 1 CF6801. ● Remove ③ PUK 1.6-225SN. Remove W motor CU3342.		W 6 gear CF5024 W 7 gear CF5025 Carrier B CU3759 Carrier W CU3760 Carrier A ZJ7116

(Fig1)



(Fig. 1)

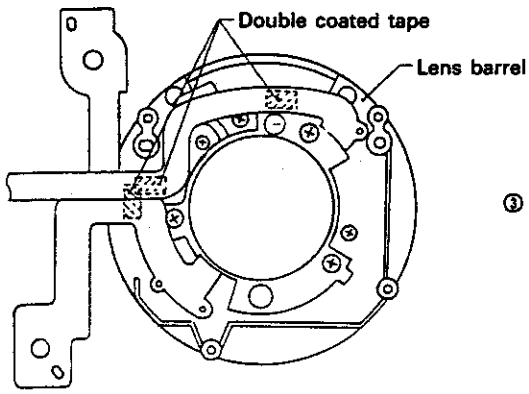
4. Disassembly the MS gear unit



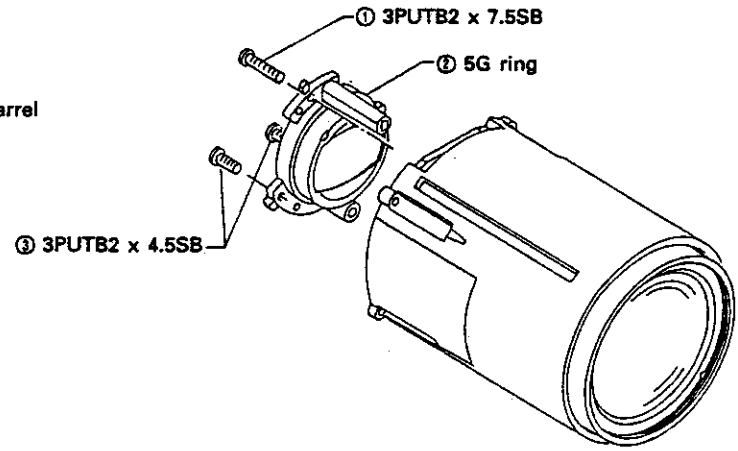
Parts to be removed	Qty.	Removed parts
● Remove ① PUTB2 x 5.5SN. ● Remove ② MS PLATE 3 CF5057. ● The gears and levers can now be disassembled.	1	② MS plate 3 CF5057 ③ MS cam gear CF5062 ④ MS roller S CF5089 ⑤ MU lever CF5066 ⑥ SC lever 2 CU3785 ⑦ M carrier 2 CU3787 ⑧ MS PCB CF5065 ⑨ M sun gear CF5059 ⑩ AV cam gear CU3782 ⑪ MS Plate 2 CF5056 ⑫ MS carrier 1 CU3786 ⑬ Carrier A ZJ7716

- Remove ⑭ PUK1.6-228SN (x2)
- Remove ⑯ MS motor CU3781 from ⑮ MS plate 1 CF5055.

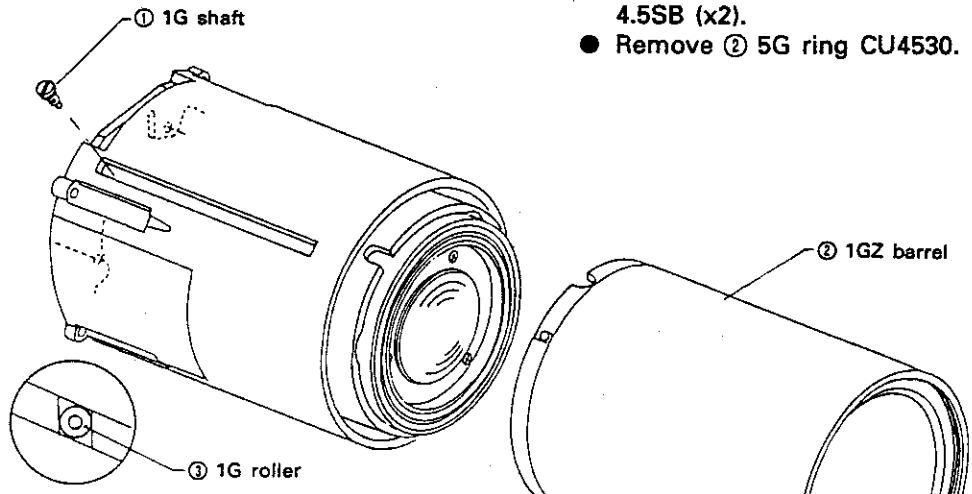
5. Disassembling the lens barrel unit



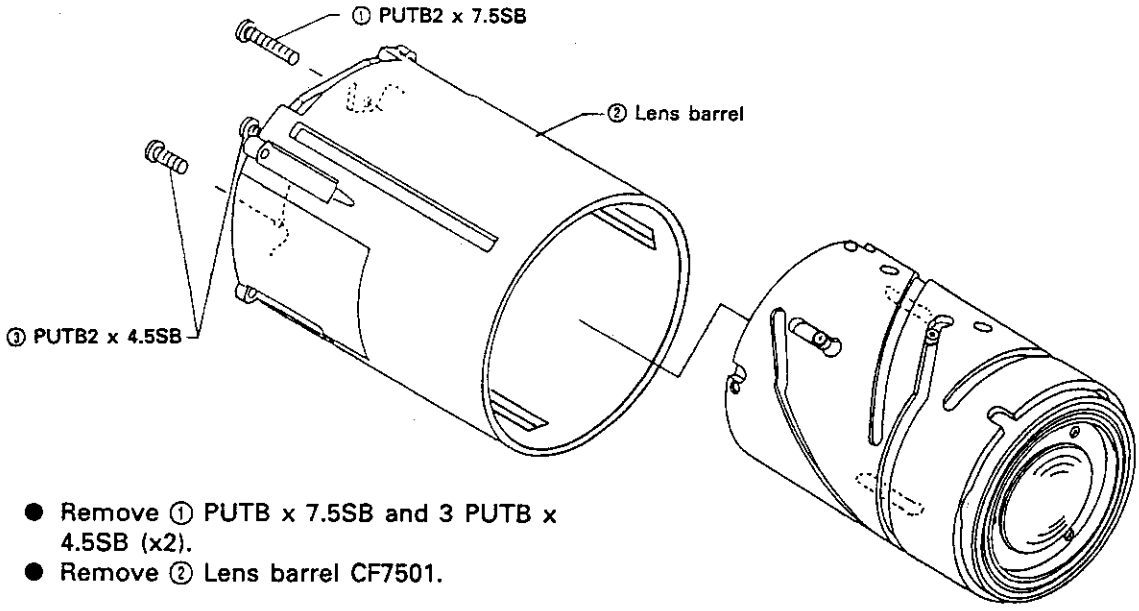
- Peel tape off of each FPC.



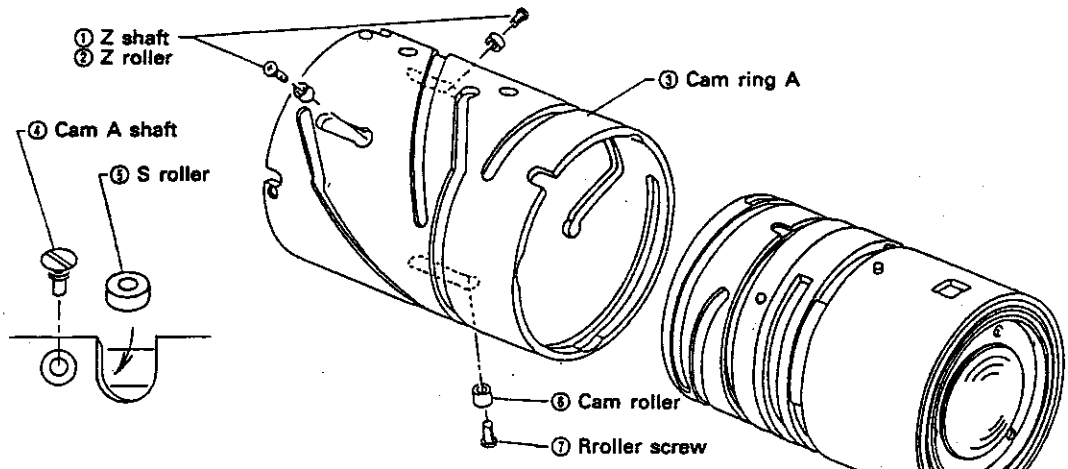
- Remove ① 3PUTB2 x 7.5SB and ③ 3PUTB x 4.5SB (x2).
- Remove ② 5G ring CU4530.



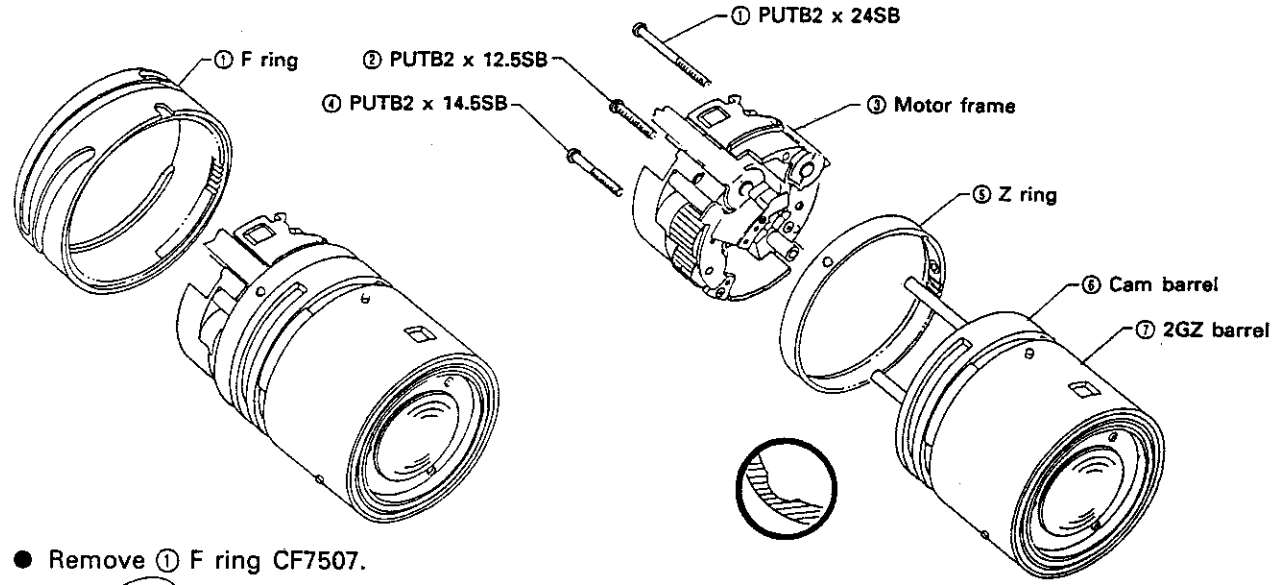
- Remove ① 1G shaft CF7570 (x3).
- Remove ② 1GZ barrel CF7503.
- Remove ③ 1G roller (x3) in cam groove.



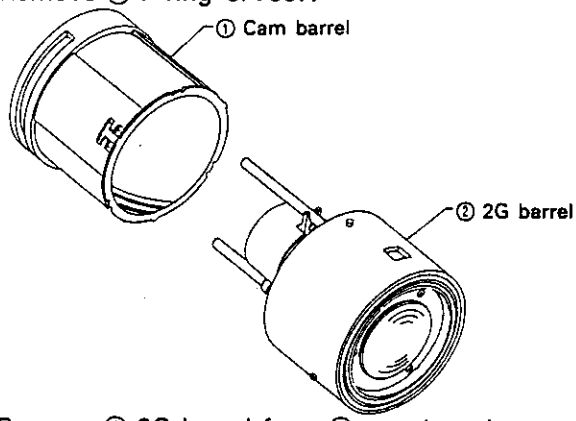
- Remove ① PUTB x 7.5SB and 3 PUTB x 4.5SB (x2).
- Remove ② Lens barrel CF7501.



- Remove ① Z shaft CF7510 (x2), ② Z roller (x2).
- Remove ⑦ roller screw CF4299, ⑥ cam roller.
- Remove ④ cam A shaft CF7531 (x3), ⑤ S roller (x3).
- Remove ③ cam ring A. (Align the relief cut with the locator pin)

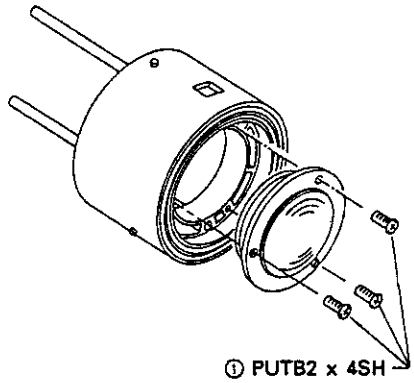


- Remove ① F ring CF7507.

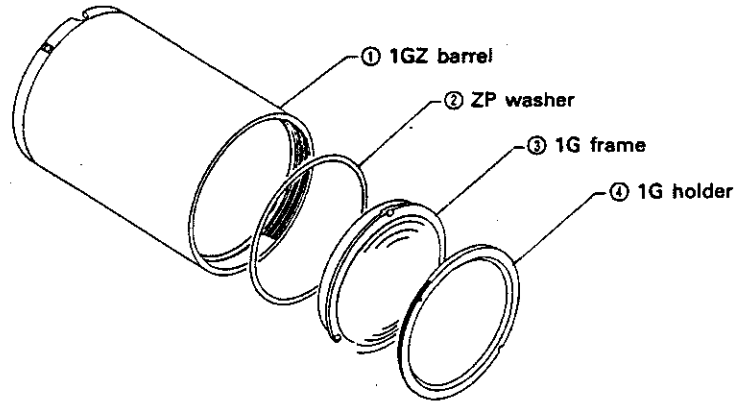


- Remove ② 2G barrel from ① cam barrel CF7502.

- Remove ① PUTB2 x 24SB, ② PUTB2 x 12.5SB, ④ PUTB2 x 14.5SB.
- Remove ③ motor frame CF7601 from ⑥ cam barrel CF7502.
- Remove ⑤ Z ring CU4532 by aligning the relief cut and the gear.
- Peel double-coated tape off of AV FPC.

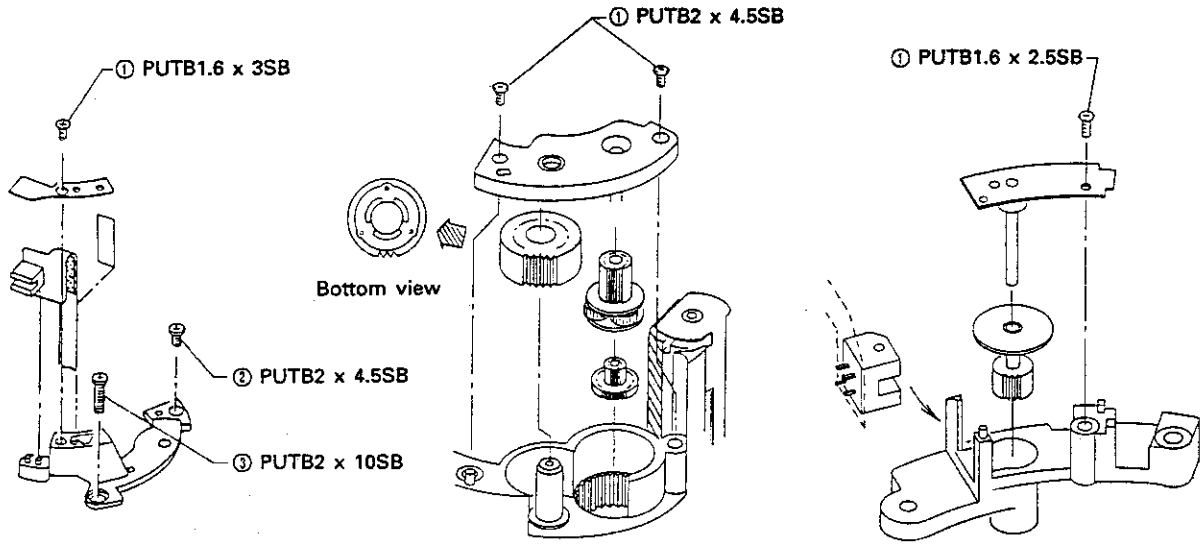


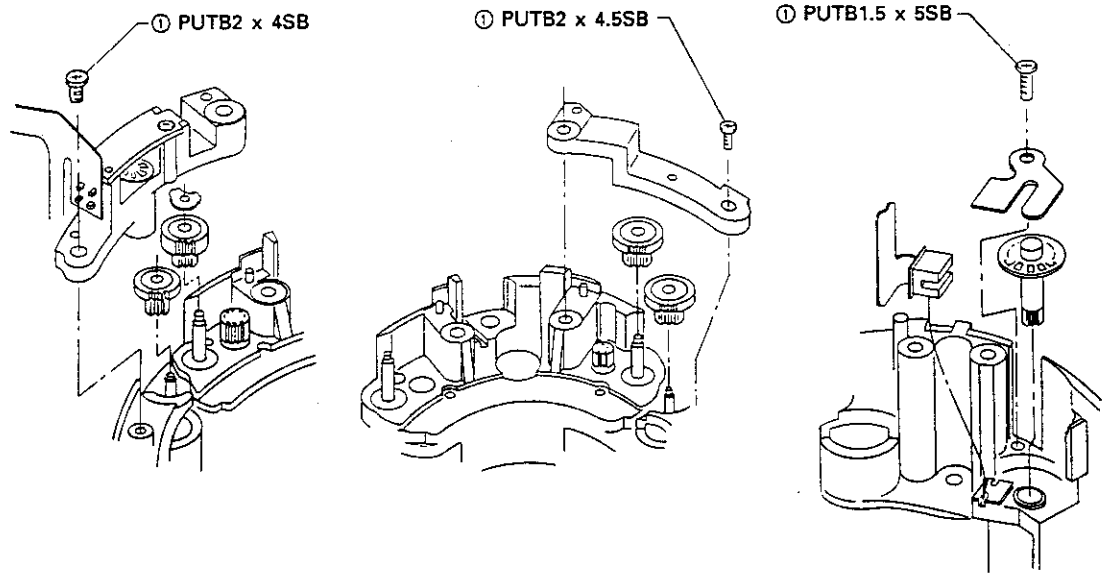
● Remove ① PUTB2x4SH (x3)



● Remove ④ 1G holder CF7522.

6. Disassembling the motor frame





● Each gear will come off as each respective screw is removed.

D. ASSEMBLY AND ADJUSTMENT

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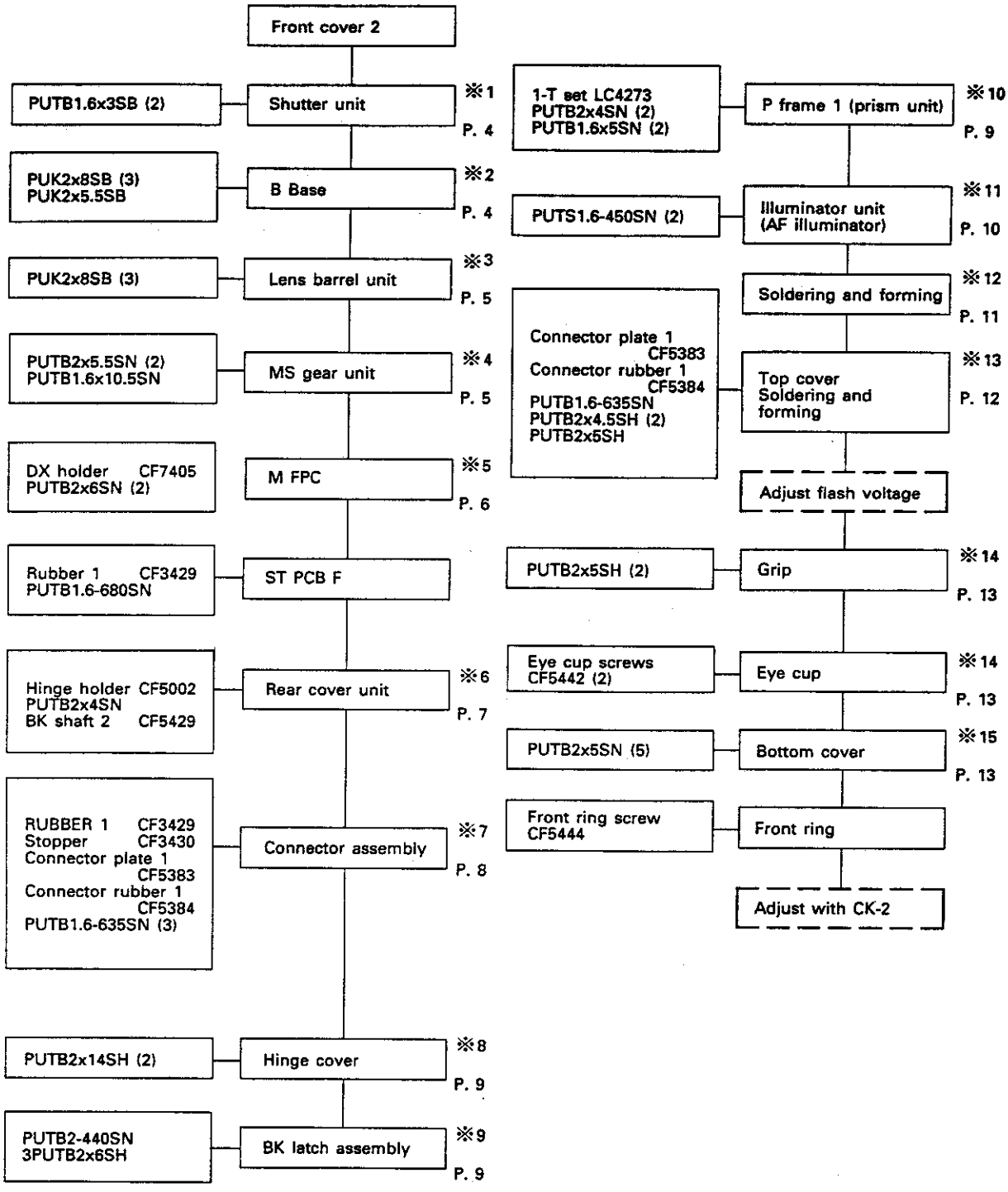
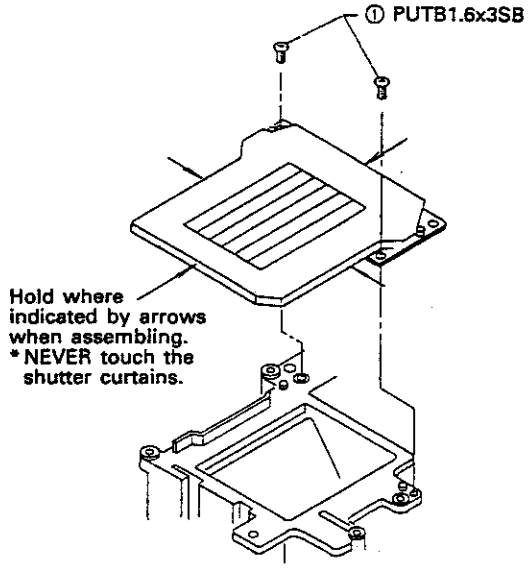
D. ASSEMBLY AND ADJUSTMENT

I. Assembling the units together



※ 1. Assembling the shutter



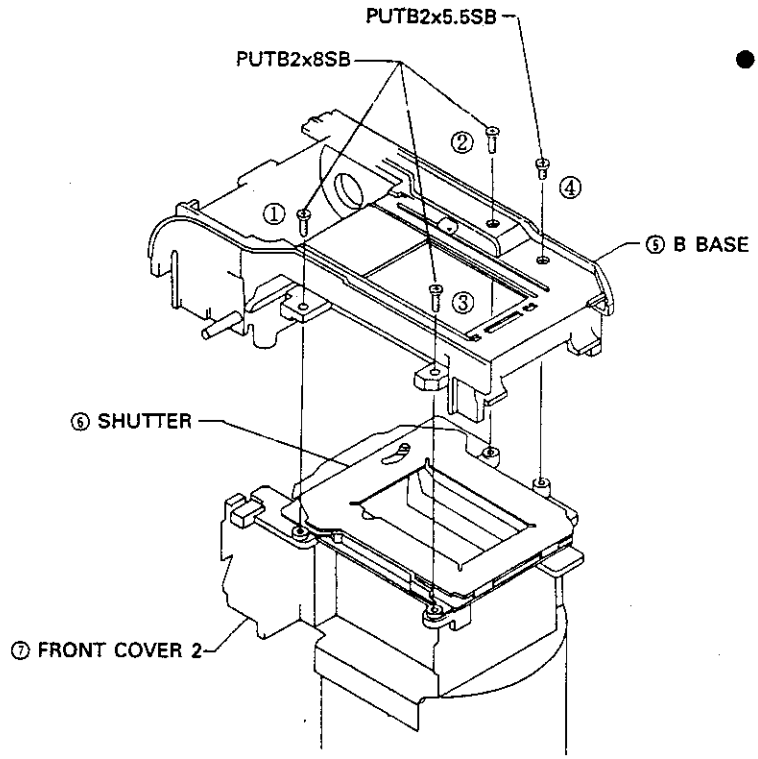
(Fig. 1)

- Attach front cover 2 (CU4501) to shutter (CU3820).
- Fasten in place with ① PUTB1.6x3SB (2).

(Fig. 1)

※ Handle with extreme care. Only hold where indicated by arrows in Fig. 1.

※ 2. Assembling the b base

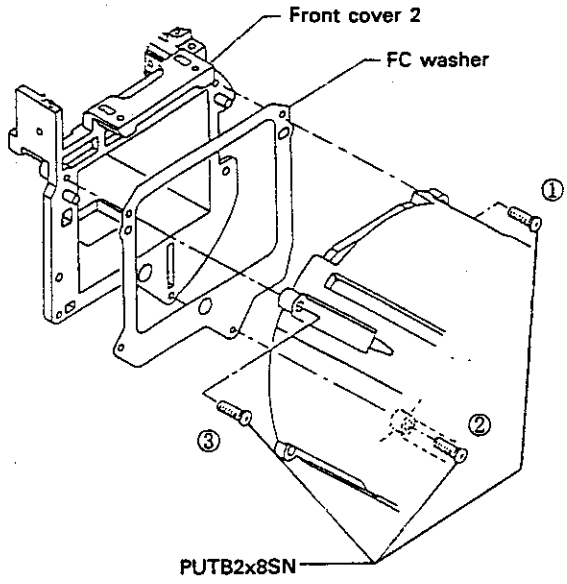


(Fig. 2)

- Attach ⑦ front cover 2 (CU4501), with ⑥ shutter (CU3820) already attached, to b base.
- Fasten in order of ① to ④ using PUTB2x8SB (3) and PUTB2x5.5SB (1).

(Fig. 2)

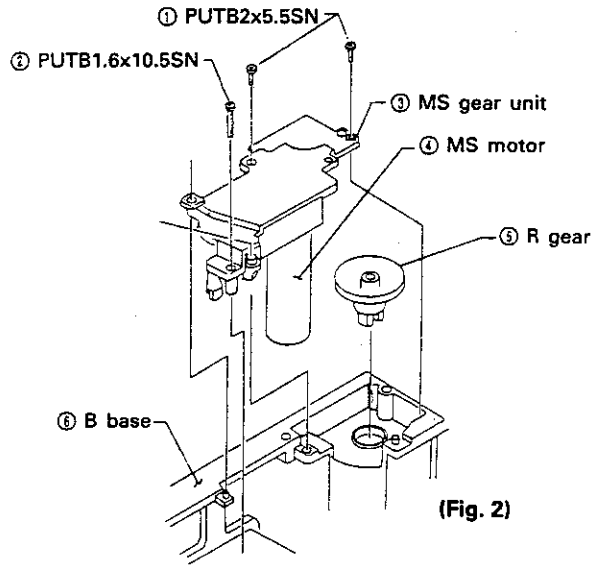
※ 3. Assembling front cover 2



(Fig. 1)

- Place FC washer (use size arrived at per FC washer adjustment procedures) on front cover 2 (CU4501). (Fig. 1)
- Fasten in order of ① to ③ using PUTB2x8SN (3).

※ 4. Assembling the MS gear box



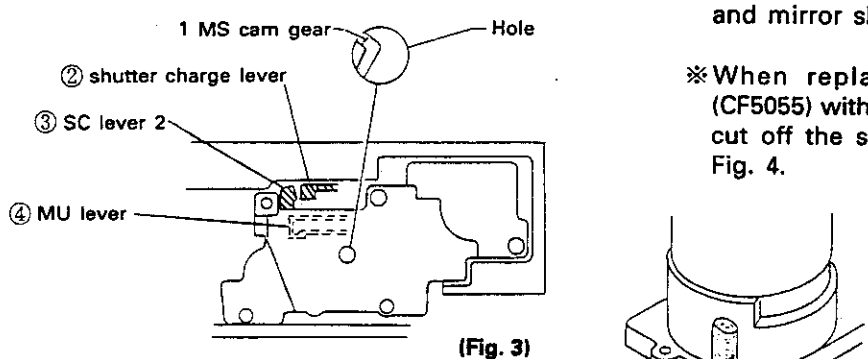
(Fig. 2)

- Rotate ① MS cam gear (CF5062) slowly and in small amounts.
- Stop rotating when you can see the cam of ① MS cam gear (CF5062) through the hole. (Fig.3)
- Invert ⑥ B Base (CF7401) and drop in ⑤ R gear (CU3770).
- ③ Attach MS gear unit to ⑥ B Base (CF7401).
- Fasten with ① PUTB2x5.5SN (2) and ② PUTB1.6x10.5SN (1). (Fig. 2)

※Assemble with mirror down and all levers set as shown in Fig. 3. (Fig. 3)

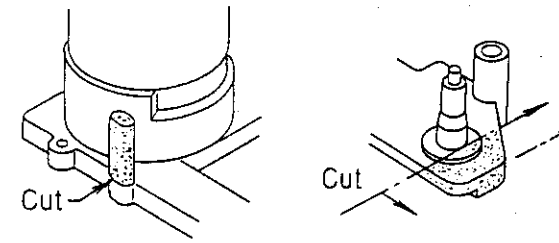
※Press ④ MU lever CF5066 and make sure the mirror moves up. Release and mirror should go down. (Fig. 3)

※When replacing MS gear unit 1 (CF5055) with MS gear unit 2 (CF5056), cut off the shaded portion shown in Fig. 4.



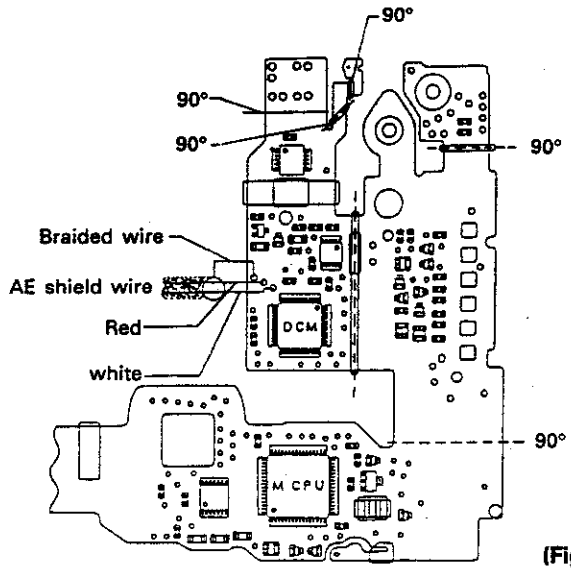
(Fig. 3)

※ Assemble with mirror down.



(Fig. 4)

※ 5. Assembling the M FPC

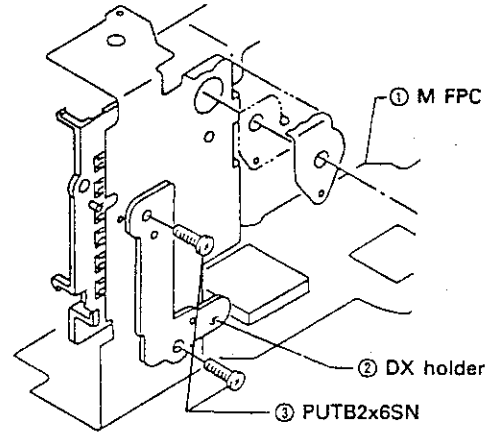


(Fig. 1)

- Do not leave stress on leads to the CPU IC when forming.
- Do not crease. Leave a rounded corner when folding.

(Fig. 1)

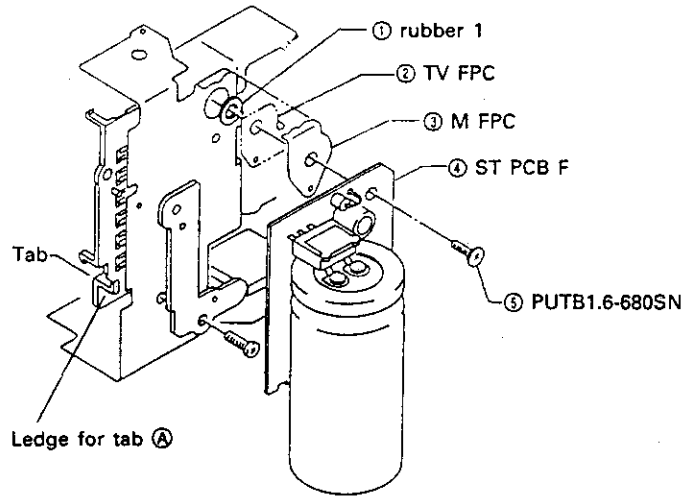
——— Fold outwards (mountain)
- - - - Fold inwards (valley)



(Fig. 2)

- Align the holes in ① M FPC (CU4514) and ② DX holder (CF7405) over the dowel rods on the DX cover.
- Fasten everything in place with ③ PUTB2x6SN (2).

(Fig. 2)



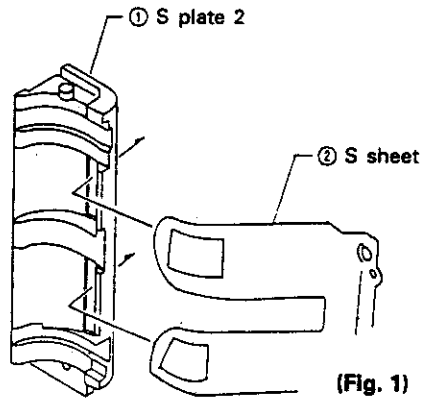
(Fig. 3)

- Assemble the following to the DX cover:
  ① rubber 1 (CF3429), ② TV FPC (CF5393), 3 M FPC (CU4514).
- Snap in section Ⓐ of ④ ST PCB F (CU4515) first, then snap the side with the connector.
- Fasten everything in place with 5 PUTB1.6-680SN (1).

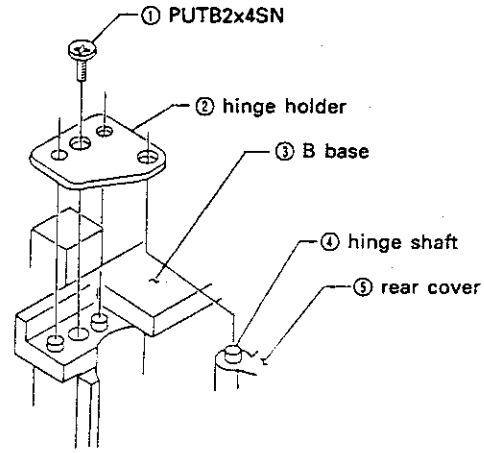
(Fig. 3)

※ Make sure all PCBs fit snugly over the dowel rods.

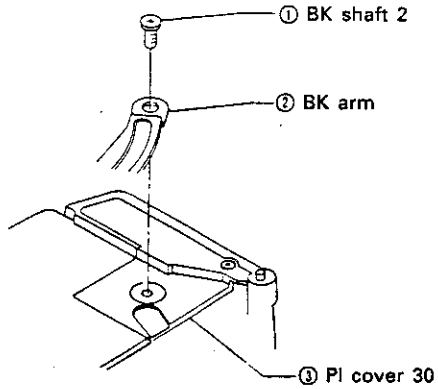
※ 6. Assembling the rear cover



(Fig. 1)



(Fig. 2)



(Fig. 3)

- Insert ② S sheet (CF5412) inside two slots in ① S plate 2 (CF6805).

※Make sure sheet does not fold around sprocket and lead into the spool compartment.

※Tabs are located on the other side of ① S plate 2 (CF6805). If the rear cover is already assembled, ② S sheet (CF5412) will catch on the tabs making it hard to remove.

(Fig. 1)

- Set one hinge shaft (CF4505) of ⑤ rear cover (CU4462) into the hinge holder (CF5002) at the bottom of the ③ B base (CF7401).
- Set ② hinge holder (CF5002) on upper ④ hinge shaft (CF5405) of ⑤ rear cover 1 (CU4462) and dowel rod of the B base.
- Fasten everything in place with ① PUTB2x4SN.

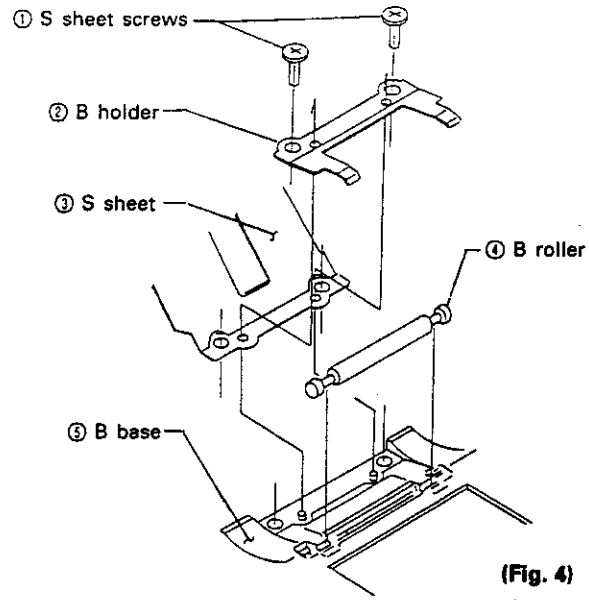
(Fig. 2)

- Align hole in ① BK arm (CF5427) of B base with hole in ③ P1 cover 30 (CF7706) of the rear cover.
- Fasten with ① BK shaft 2 (CF5429).

(Fig. 3)

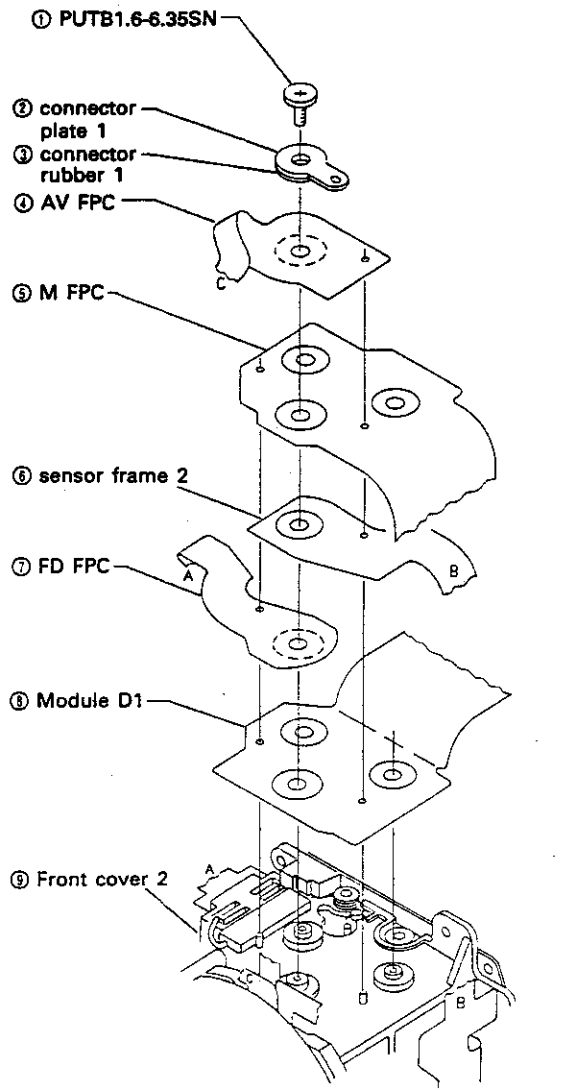
- Place ④ B roller (CF5006) in ⑤ B base (CF7401).
- Place ③ S sheet (CF5412) and ② B holder (CF5007) over the dowel rods in the ⑤ B base (CF7401).
- Fasten everything in place with ① S sheet screws (CF5443) x 2.

(Fig. 4)



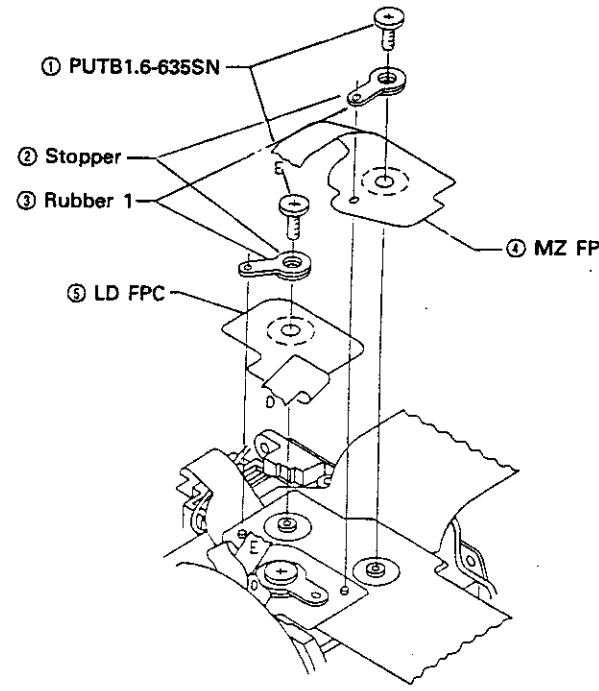
(Fig. 4)

※ 7. Assembling the connector assembly



(Fig. 1)

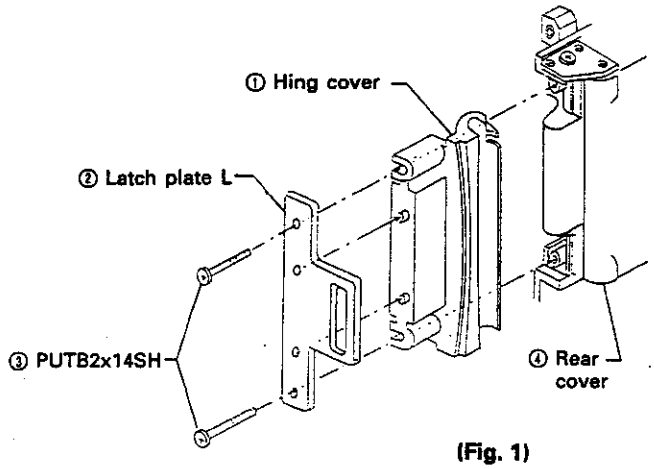
- Assemble onto ⑨ front cover 2 (CU4501) in order:
  ⑧ module D1 (CU4547), ⑦ FD FPC (CU4286), ⑥ sensor frame 2 (CU4503).
- Being careful not to let the FPCs move out of place, assemble ⑤ M FPC (CU4514) and ④ AV FPC (CF7660).
- Assemble ③ connector rubber 1 (CF5384) and ② connector plate 1 (CF5383). Note, ② connector plate 1 (CF5383) must be facedown.
- Fasten everything in place with ① PUTB1.6-635SN.



(Fig. 2)

- Assemble in this order:
  ⑤ LD FPC (CF7631), ③ rubber 1 (CF3429), ② stopper (CF3430).
- Fasten everything in place with ① PUTB1.6-635SN.
- Assemble in this order:
  ④ MZ FPC (CF7630), ③ rubber 1 (CF3429), ② stopper (CF3430).
- Fasten everything in place with ① PUTB1.6-635SN.

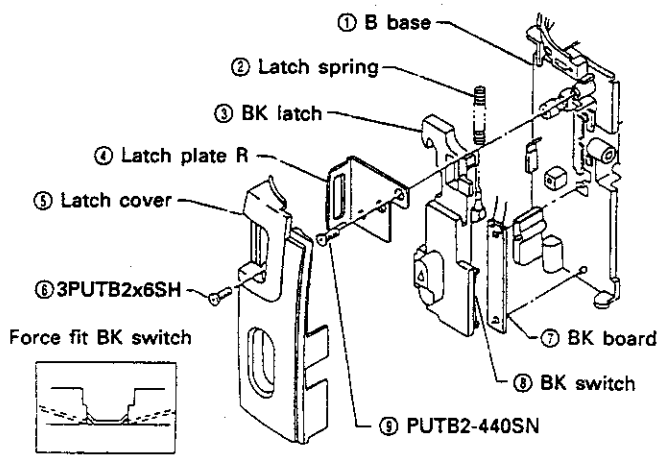
※ 8. Assembling the hinge cover



(Fig. 1)

- Attach ① hinge cover (CF7403) and ② latch plate L (CF7402) to B base.
- Fasten with ③ PUTB2x14SH (2) (Fig. 1)

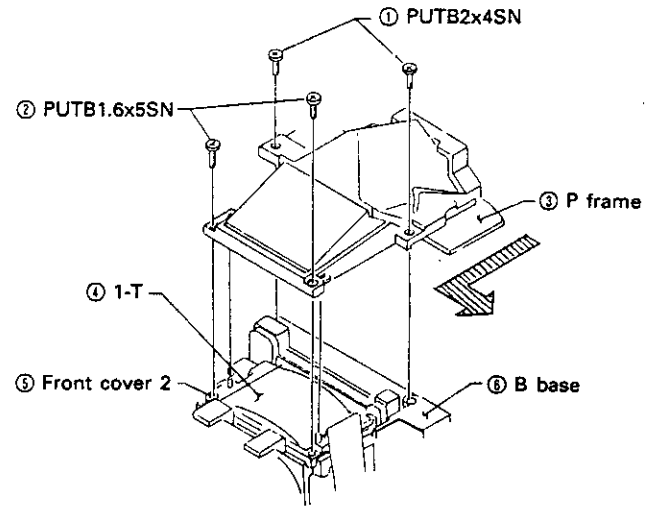
※ 9. Assembling the BK latch assembly



(Fig. 2)

- Force fit ⑧ BK switch (CF5009) into ③ BK latch (CF7408).
- Insert ② latch spring (CF5010) into ③ BK latch (CF7408).
- Assemble onto ① B base (CF7401) in this order: ⑦ BK board (CF5011), ③ BK latch (CF7408), ④ latch plate R (CF7410).
- Fasten everything in place with ⑨ PUTB2-440SN.
- Assemble ⑤ latch cover (CF7409) and tighten in place with ⑥ 3PUTB2x6SH. (Fig. 2)

※ 10. Assembling the P FRAME 1 (prism unit)

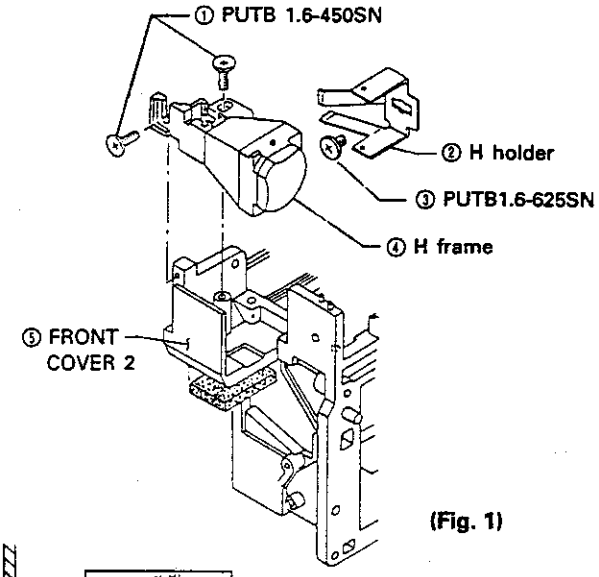


(Fig. 3)

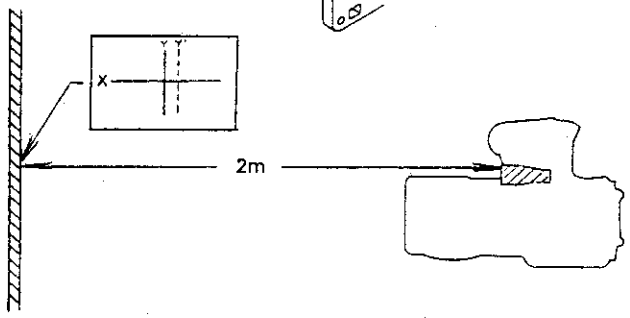
- Assemble onto ③ P frame 1 (CU4493) in this order: Screen (LC4362), screen frame (CF7441), ④ 1-T (condenser lens) (LC4273).
- Fasten everything in place with ① PUTB2x4SN (2) and ② PUTB1.6x5SN (2)

※Remove PF prism (CF5123) to facilitate assembly of screen (LC4362) and screen frame (CF7441). (Fig. 3)

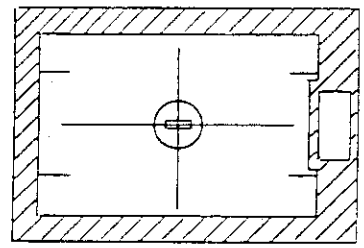
※ 11. Assembling and adjusting the illuminator unit (AF illuminator)



(Fig. 1)

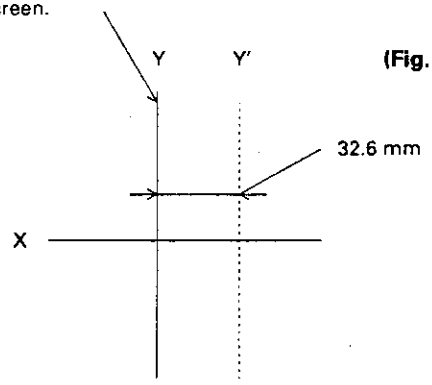


(Fig. 2)



Aligned with centers of the screen.

(Fig. 3)



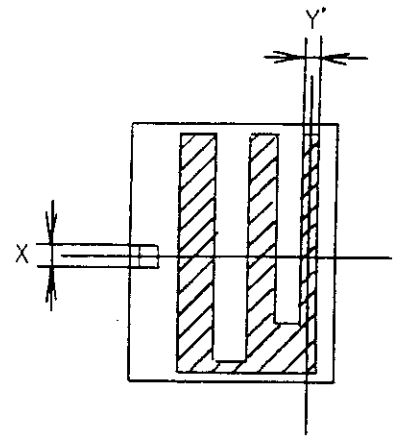
(Fig. 4)

- Assemble ② H holder (CF6864) on ⑤ front cover 2 (CU4501).
- Fasten everything in place with ③ PUTB1.6-625SN.
- Align hole in ② H holder (CF6864) with dowel rod on ④ H frame (CU4276).
- Loosely tighten ① PUTS1.6-450SN so that ④ H frame (CU4276) can be adjusted afterwards.

(Fig. 1)

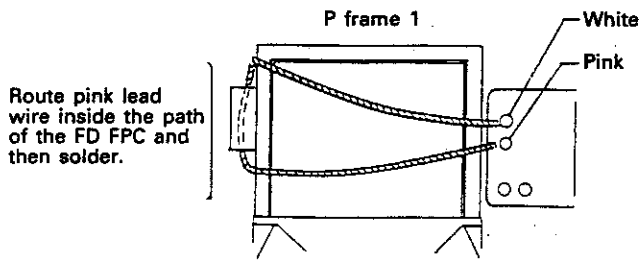
Adjusting the position of the illuminator unit (AF illuminator)

- Take a piece of paper with a crossed line drawn on it, and set it up 2 m away from the tip of ④ illuminator unit (AF illuminator) (CU4276).
- Align the centers of the cross and the viewfinder screen.
- Connect power (1.5 Vdc) directly to ④ illuminator unit (AF illuminator) (CU4276).
- Set a point 32.6 mm to the right of the center of the cross. Adjust ① PUTS1.6-450SN slowly so that the projected image enters the range shown in Figure 5.
- Apply screw-locking agent to screw after adjustment is complete.

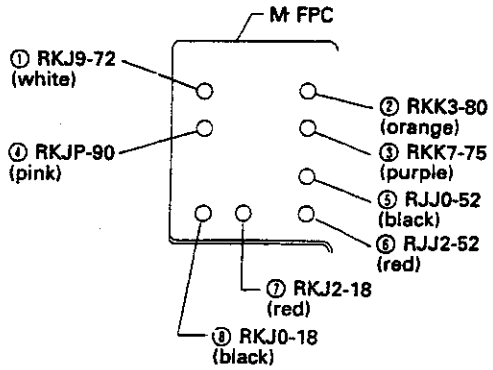


(Fig. 5)

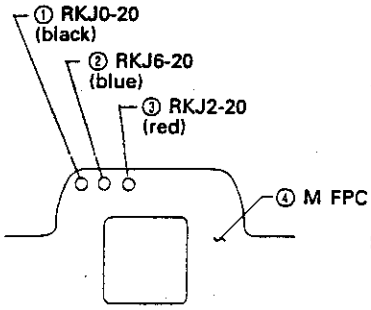
※ 12. Soldering and forming



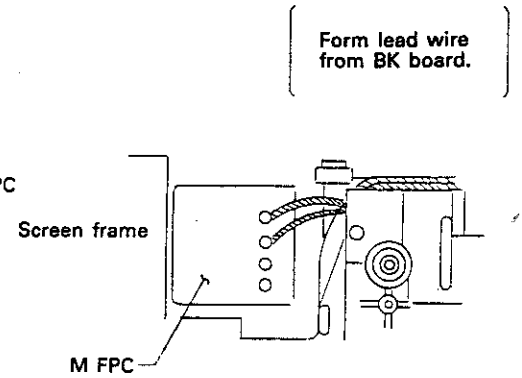
(Fig. 1)



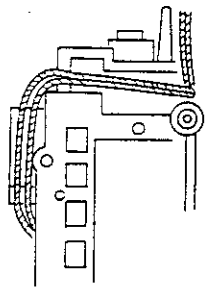
(Fig. 2)



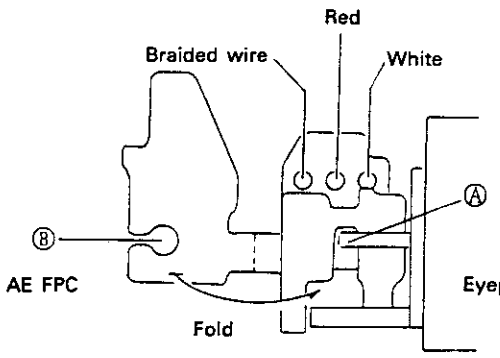
(Fig. 3)



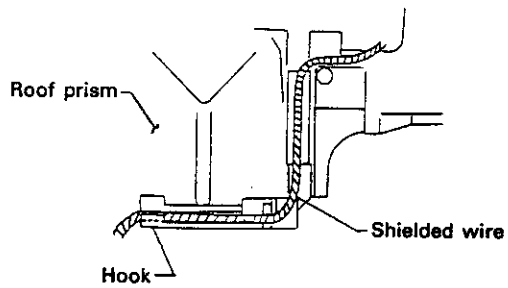
(Fig. 4)



(Fig. 5)

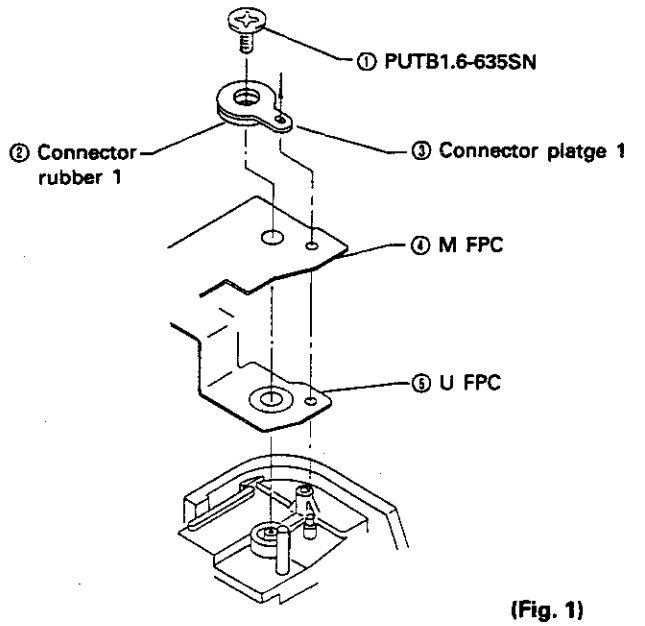


(Fig. 6)



(Fig. 7)

※ 13. Assembling the top cover



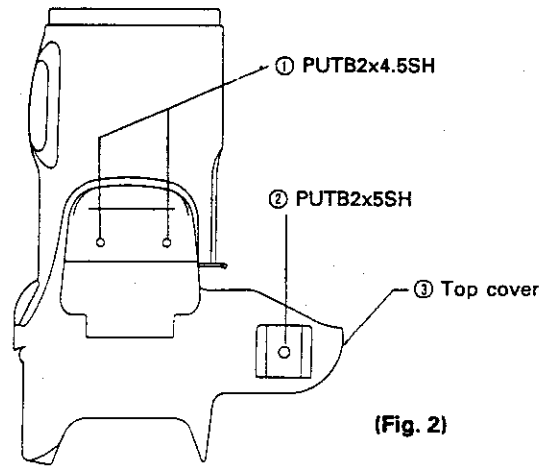
(Fig. 1)

● Assemble in this order: ⑤ U FPC (CPU4489), ④ M FPC (CU4514), ② connector rubber 1 (CF5384), ③ connector plate 1 (CF5383).
● Fasten everything in place with ① PUTB1.6-635SN.

(Fig. 1)

● Attach ③ top cover being careful not to pinch the U FPC.

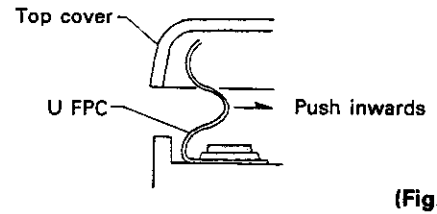
(Fig. 3)



(Fig. 2)

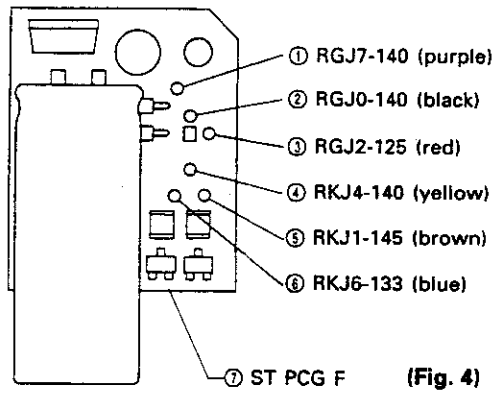
● Fasten everything into place with ① PUTB2x4.5SH (2) and ② PUTB2x5SH (1).

(Fig.2)



(Fig. 3)

Conceal excess wire inside top cover.



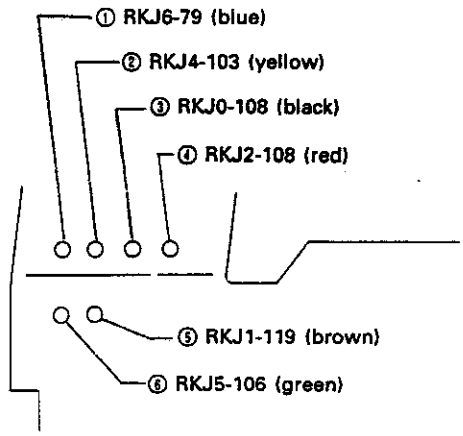
(Fig. 4)

● Solder the ① purple, ② black, ③ red, ④ yellow, ⑤ brown, and ⑥ blue lead wires to ⑦ ST PCB FF.

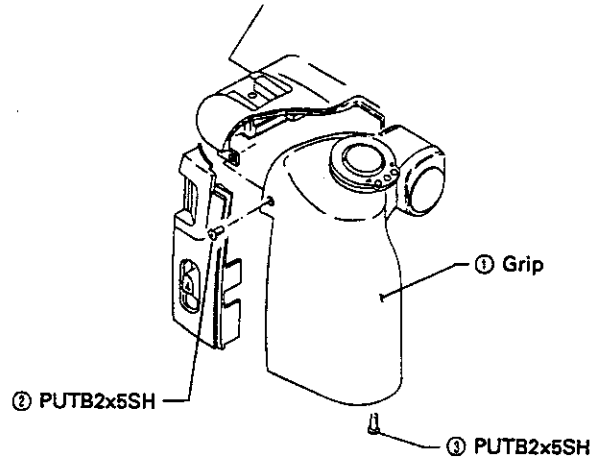
(Fig. 4)

※Conceal excess lead wire inside top cover.

※ 14. Assembling the grip and eye cup

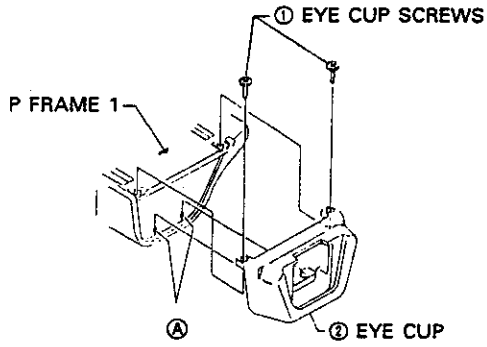


(Fig. 1)



(Fig. 2)

- Solder lead wires.

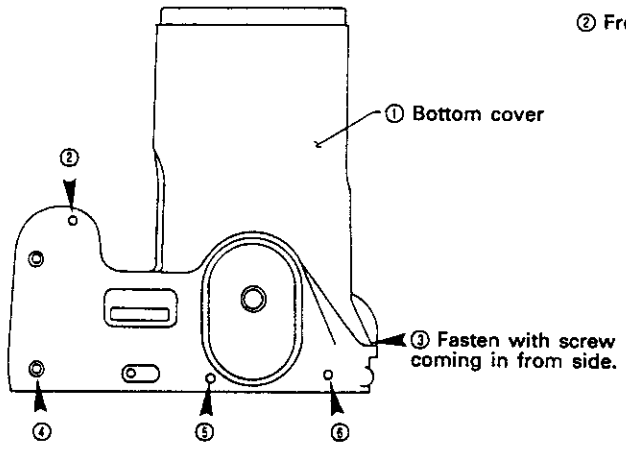


(Fig. 3)

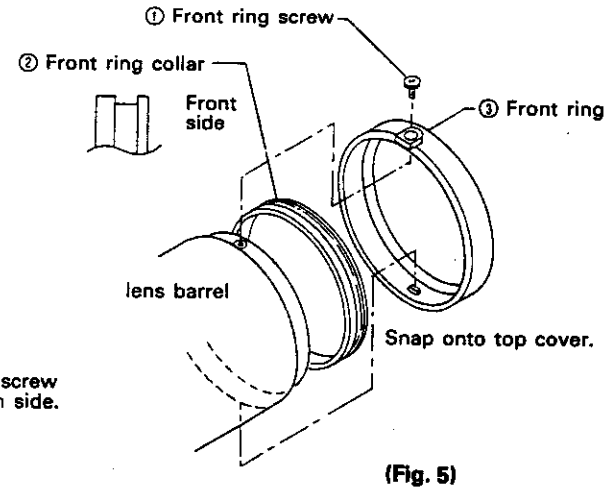
- Press ① grip (CU4509) into place.
- Fasten in place with ② PUTB2x5SH and ③ PUTB2x5SH.

- Hook 2 eye cup tabs into Ⓐ.
- Tighten ① eye cup screws (2) (CF5442).

※ 15. Assembling the bottom cover



(Fig. 4)



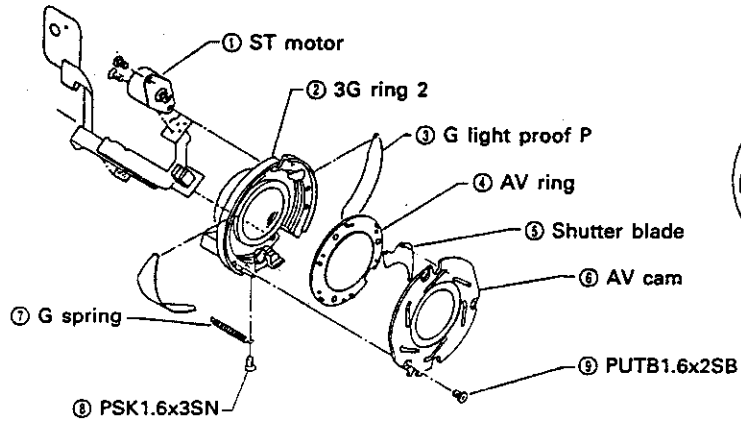
(Fig. 5)

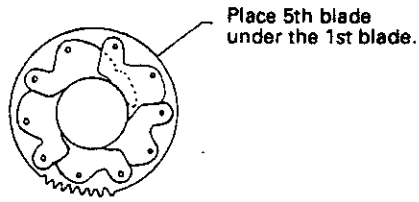
- Attach ① bottom cover (CU4495).
- Fasten with PUTB2x5SH (5)

- Assemble ② front ring collar (CF7765).
- Assemble ③ front ring (CF7747).
- Fasten everything in place with ① front ring screw (1).

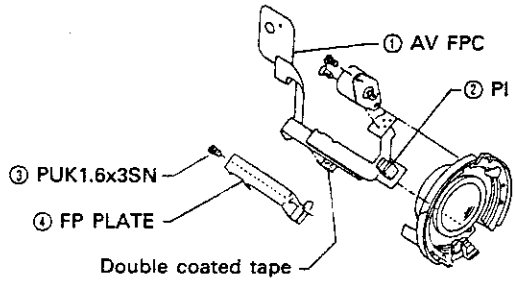
II. Assembling each unit

※ 1. Assembling the 3G ring 2

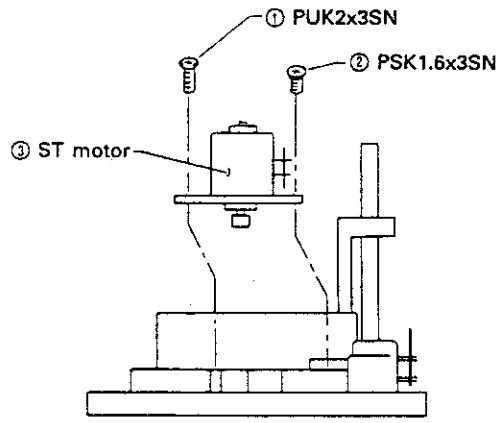




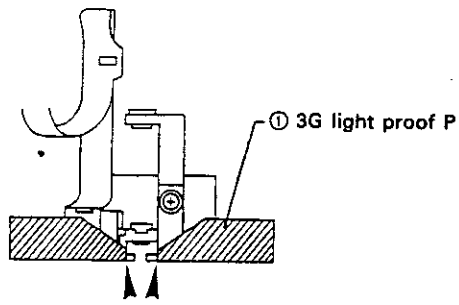
- Assemble onto ② 3G ring 2 (CU4525) in this order: ④ AV ring (CF7651, ⑤ shutter blade (CU4523), ⑥ AV cam (CF7625).
- Fasten everything in place with ⑨ PUTB1.6x2SB (3).



- Insert ② photo interrupter into the ring and attach ④ FP plate (CF7665).
- Fasten in place with ③ PUK1.6x3SN.

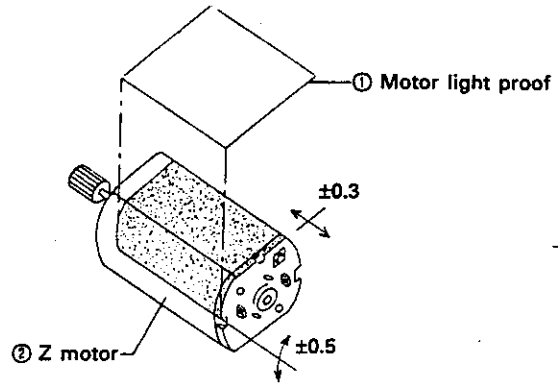


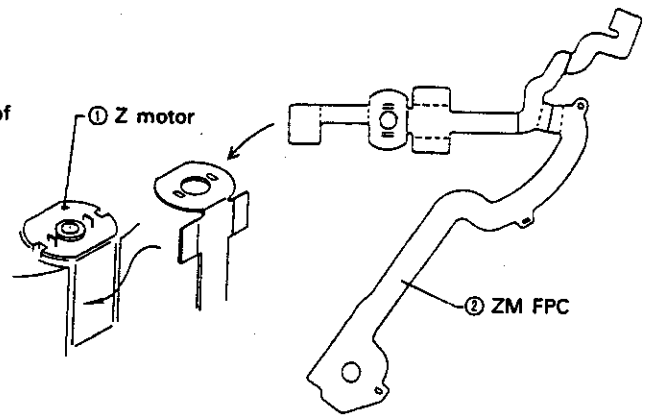
- Align the gear teeth of ③ ST motor (CU4522) with the AV ring and assemble motor into place.
- Fasten everything in place with ① PUK2x3SN and ② PSK1.6x3SN.



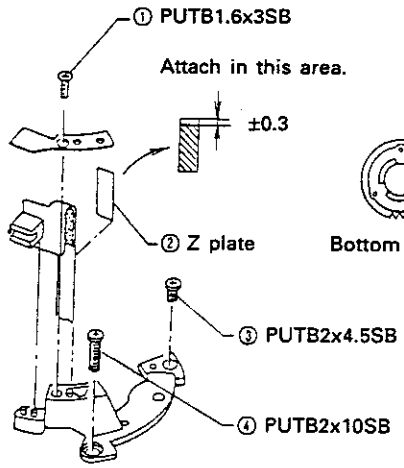
- Attach with the edges of ① 3G light proof P aligned.

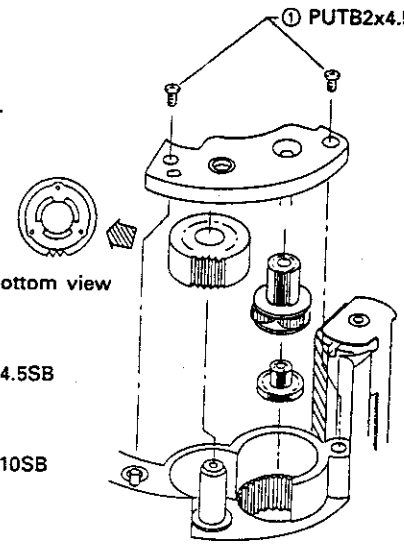
※ 2. Assembling the motor frame

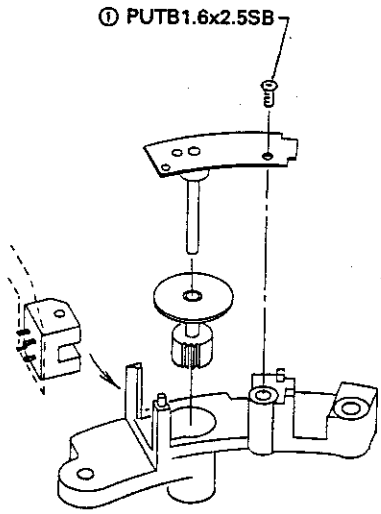


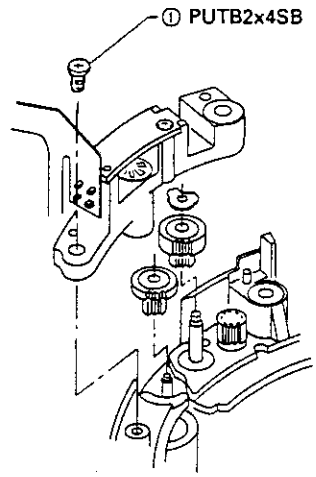


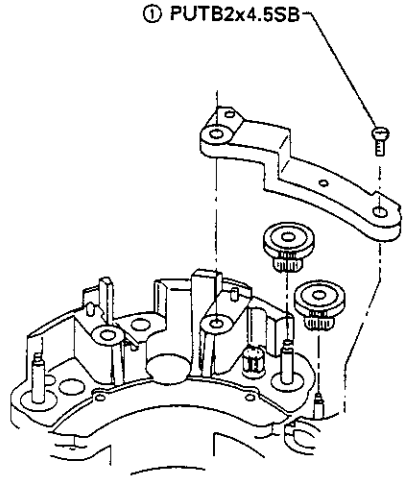
- Affix ① motor light proof (CU4534) on ② Z motor (CF7633).
- Solder ② ZM FPC (CF7630) to ① Z motor (CU4534).
- Insert the tabs on ② ZM FPC (CF7630) and attach so that the FPC is flush against the motor.

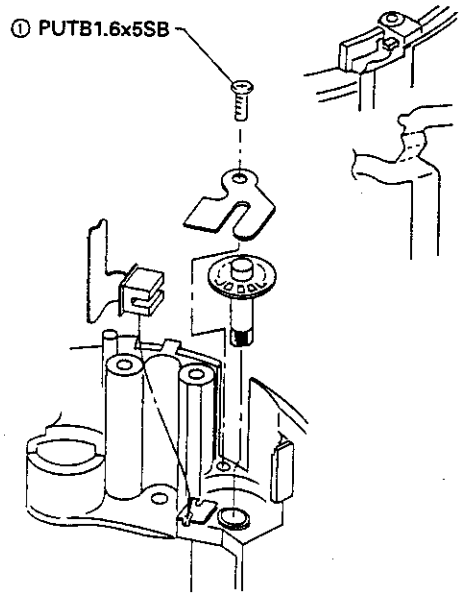






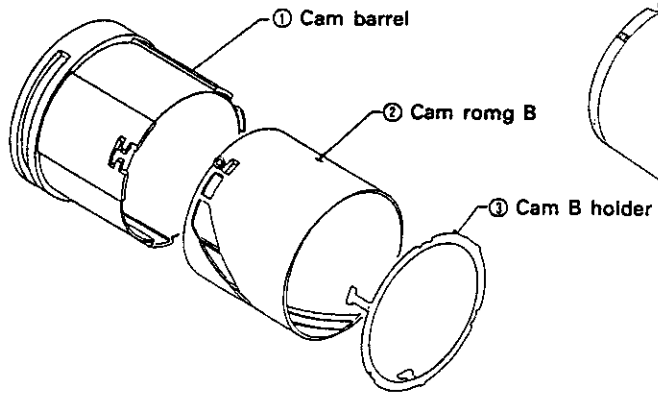




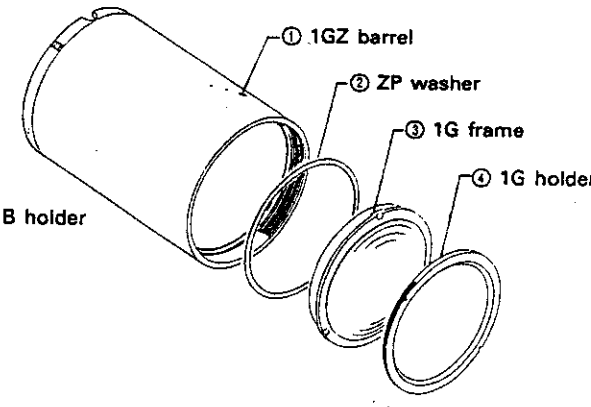


- Assemble all components and fasten in place with screws.

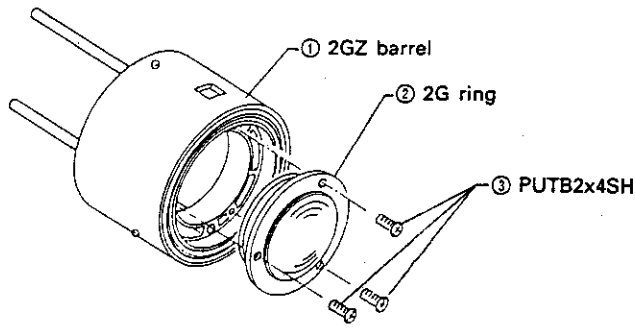
※ 3. Assembling the lens barrel



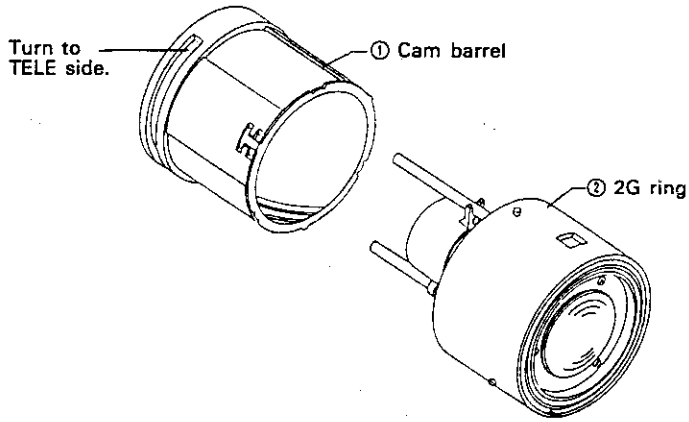
- Align ① cam barrel (CF7502) to notch in ② cam ring B (CF7506) and assemble into place.
- Fasten in place with ③ cam B holder (CF7523).



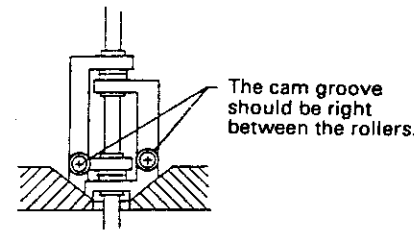
- Assemble ② ZP washer and ③ IG frame (CU4520) onto ① 1GZ barrel (CF7503).
- Fasten in place with ④ 1G holder (CF7522).

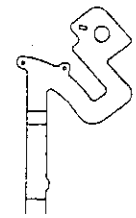


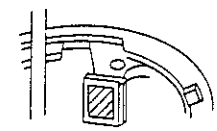
- Assemble ② 2G ring (CU4529) on ① 2GZ barrel (CU4526).
- Fasten in place with ③ PUTB2x4SH (3).

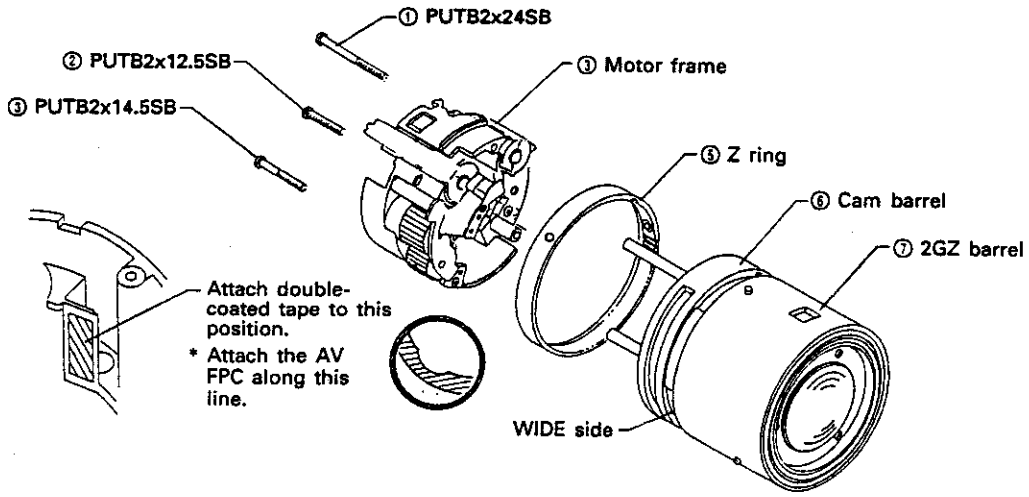


- Align rollers on 34 G ring with groove in ① cam barrel (CF7502) and assemble into place.

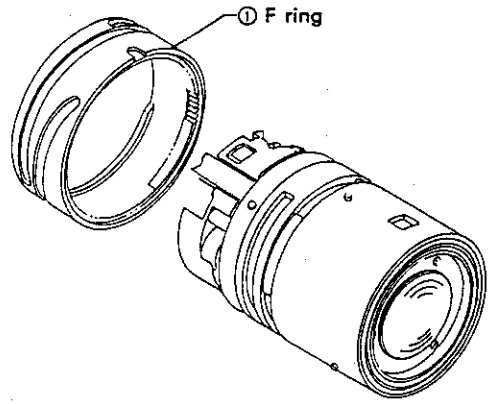




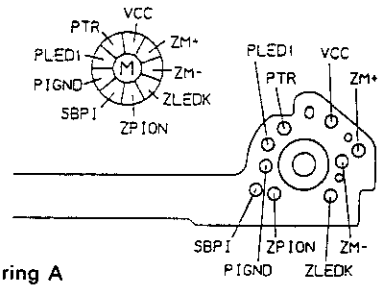


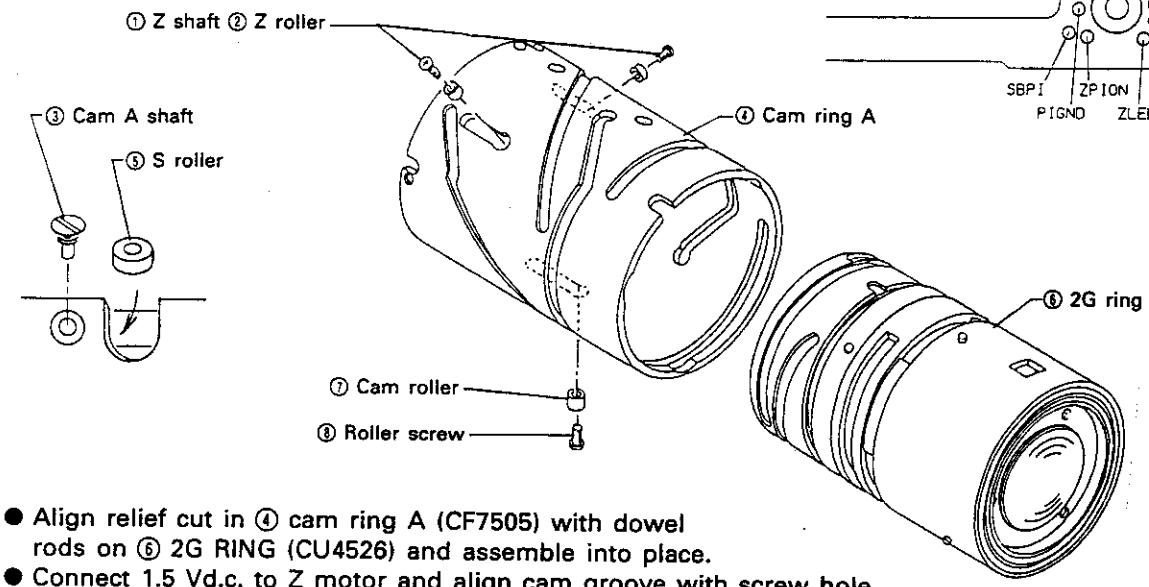


- Align relief cut in ⑤ Z ring (CU4532) with gear teeth and assemble onto ③ motor frame (CF7601).
- Assemble ③ motor frame (CF7601) onto ⑥ cam barrel (CF7502).
- Fasten everything in place with ① PUTB2x24SB, 2 PUTB2x12.5SB, ④ PUTB2x14.5SB (3).

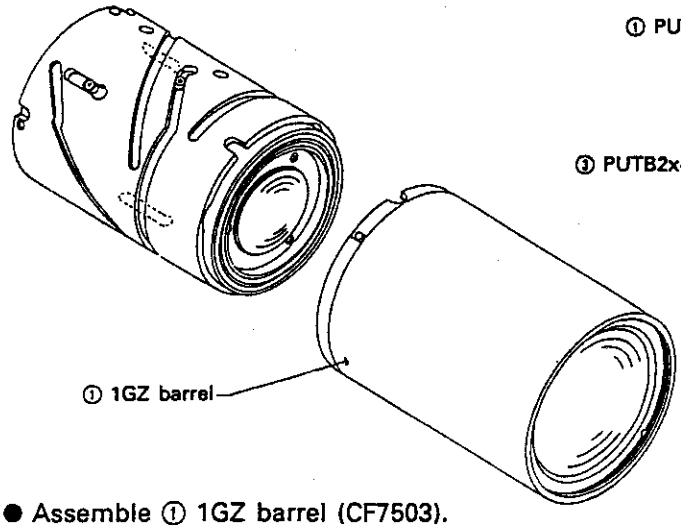


- Assemble ① F ring (CF7507) onto the cam barrel.

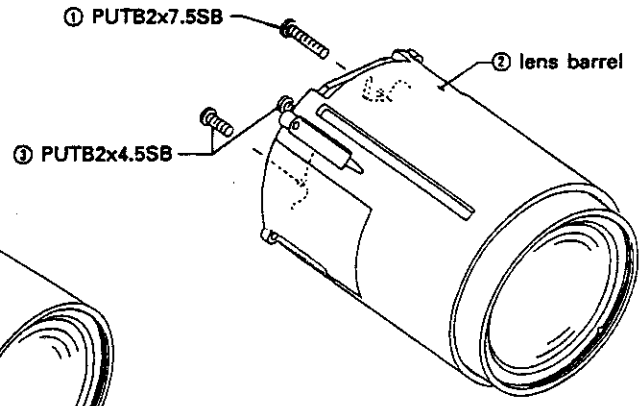




- Align relief cut in ④ cam ring A (CF7505) with dowel rods on ⑥ 2G RING (CU4526) and assemble into place.
- Connect 1.5 Vd.c. to Z motor and align cam groove with screw hole.
- Insert ⑤ S roller and fasten with ③ cam A shaft (CF7531).
- Insert ⑦ cam roller and fasten with ⑧ roller screw (CF4299).
- Insert ② Z roller and fasten with ① Z shaft (CF7510).

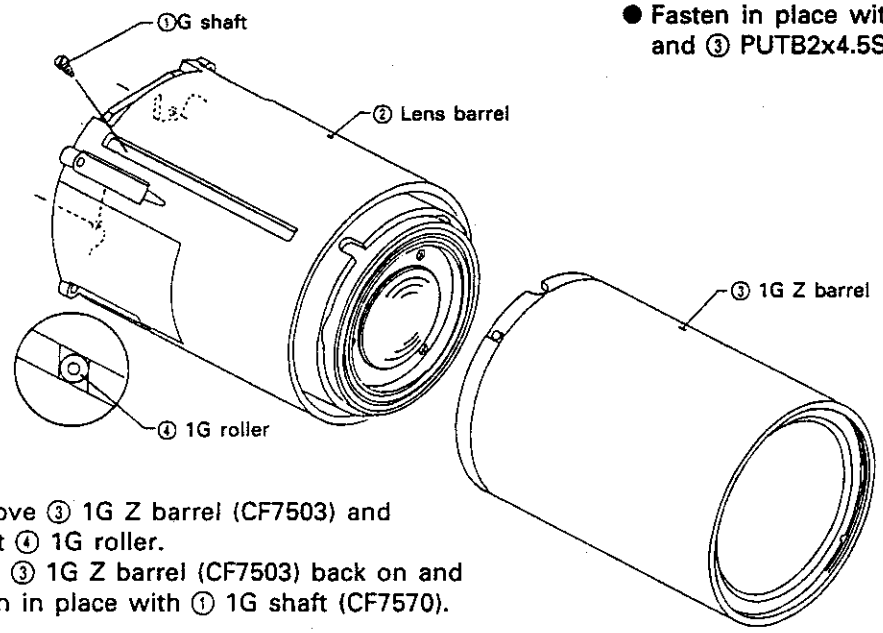


● Assemble ① 1GZ barrel (CF7503).

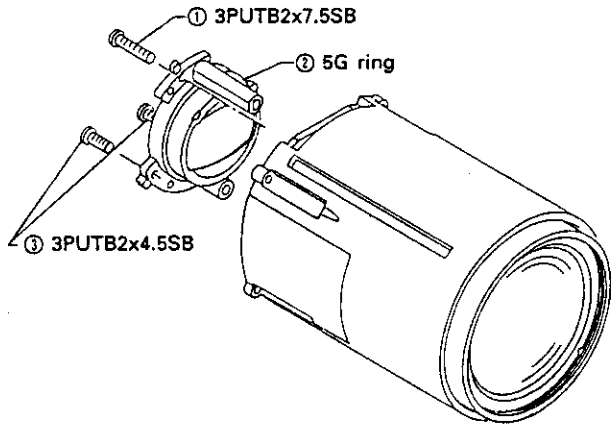


● Assemble ② lens barrel (CF7501).

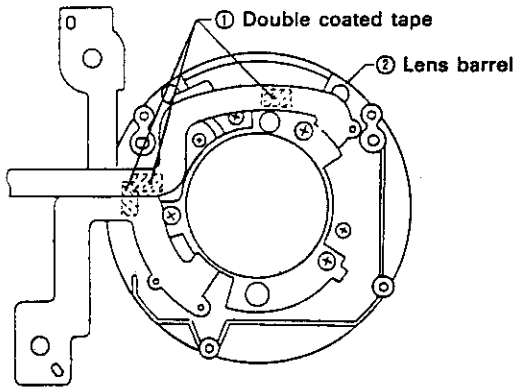
● Fasten in place with ① PUTB2x7.5SB and ③ PUTB2x4.5SB.



● Remove ③ 1G Z barrel (CF7503) and insert ④ 1G roller.
● Place ③ 1G Z barrel (CF7503) back on and fasten in place with ① 1G shaft (CF7570).



● Assemble 2 5G ring (CU4530).
● Fasten in place with ① 3PUTB2x7.5SB and ③ 3PUTB2x4.5SB.



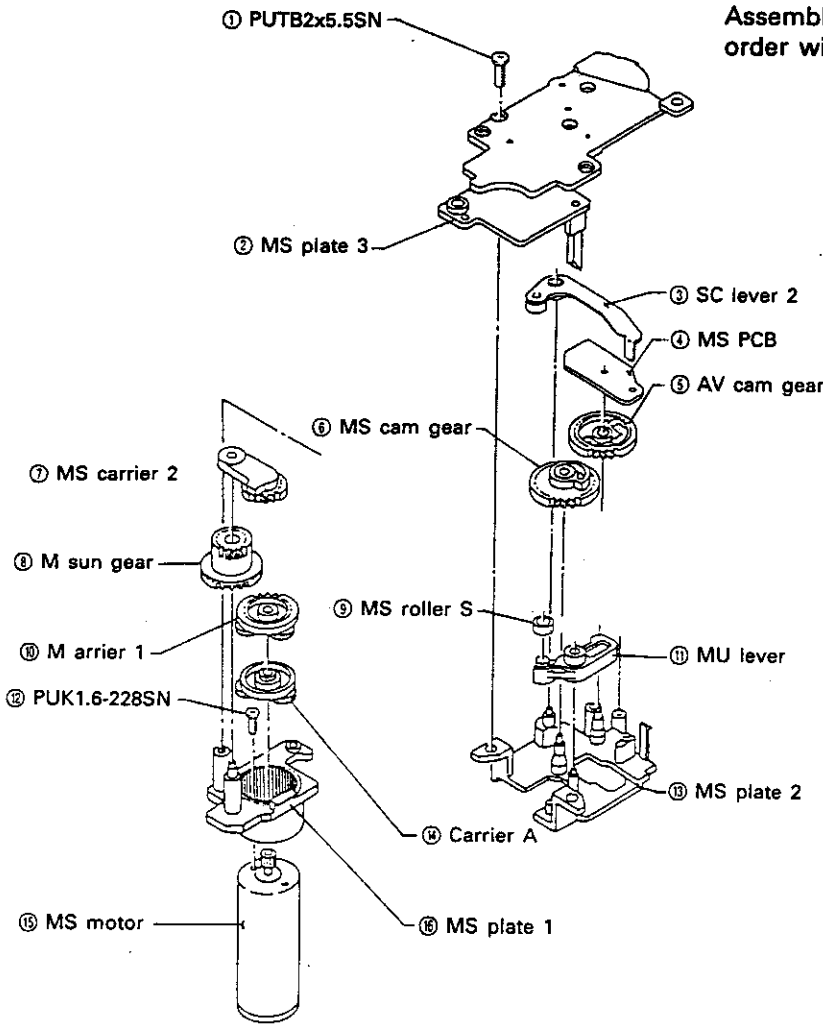
● Attach double-coated tape to each FPC.

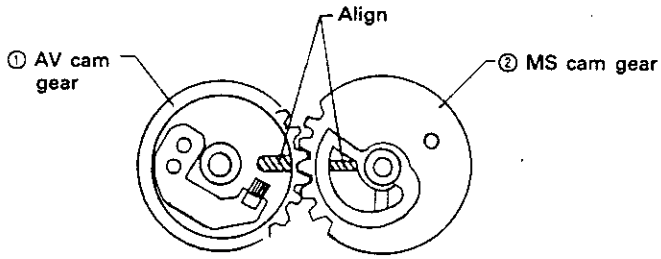
※ 4. Assembling the MS gear unit

※The MS gear unit is held in place with one screw, and one hook.

● Assembly procedures
Assemble these parts in the following order with the MS motor face down:

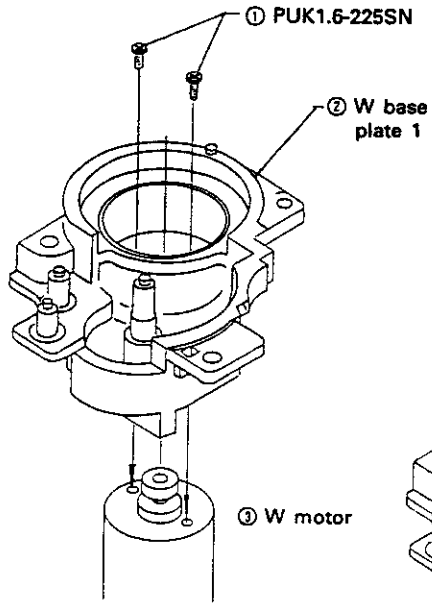
⑯ MS plate 1 - Fasten ⑮ MS motor with ⑫ PUK1.6-228SN (2).
⑭ Carrier A
⑩ M carrier 1
⑧ M sun gear
⑬ MS plate 2
⑪ MU lever
⑨ MS roller S
⑥ MS cam gear
⑤ AV cam gear
④ MS PCB
③ SC lever 2
⑦ M carrier 2
② MS plate 3 (snaps into place)
Fasten with ① PUTB2x5.5SN (1).



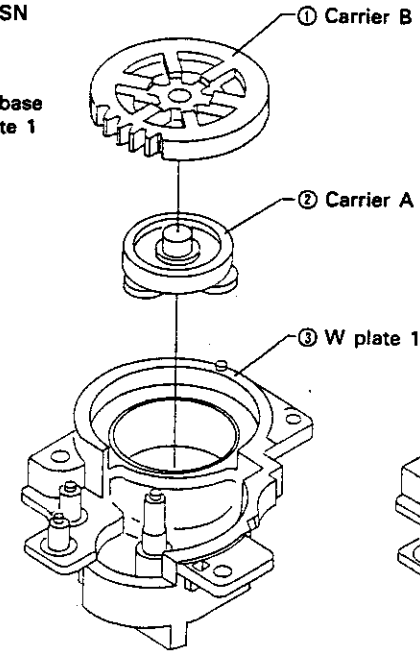


※Adjusting the position of ① AV cam gear and ② MS cam gear. Assemble by aligning the positioning rib (shaded portion in the figure) of ① AV cam gear (CU3782) to the rib inside the cam of ② MS cam gear (CF5062).

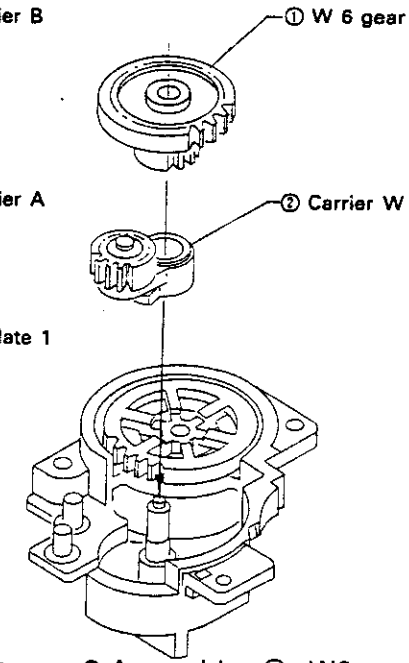
※ 5. Assembling the winding gear unit



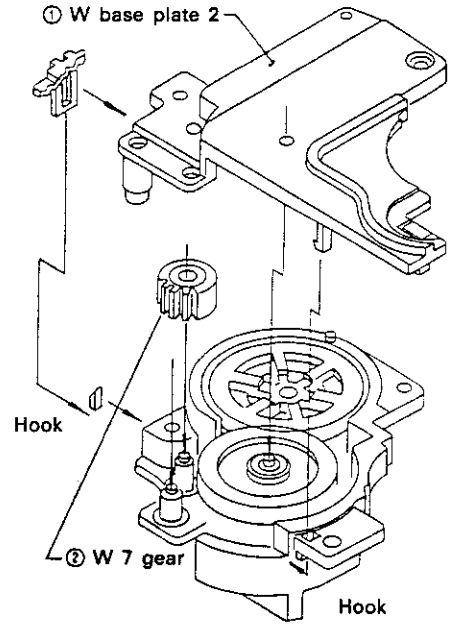
- Place ② W base plate 1 (CF6801) on ③ W motor (CU3342).
- Fasten with ① PUK1.6-225SN (2)



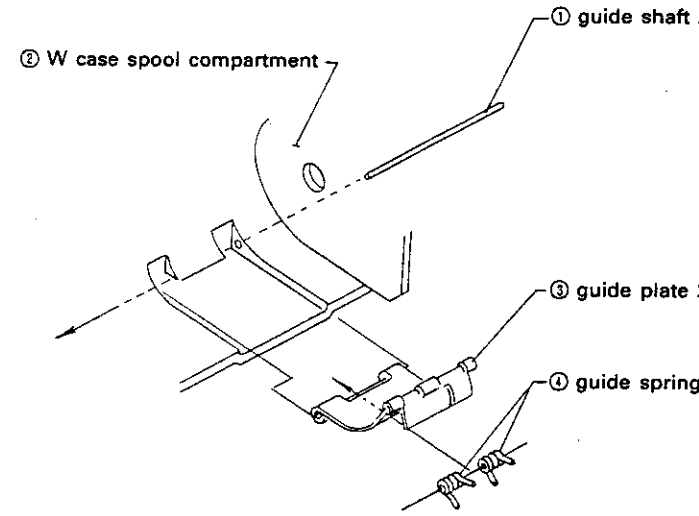
- Assemble ② carrier A (ZJ7116) and ① carrier B (CU3759) into ③ W base plate ① (CF6801).



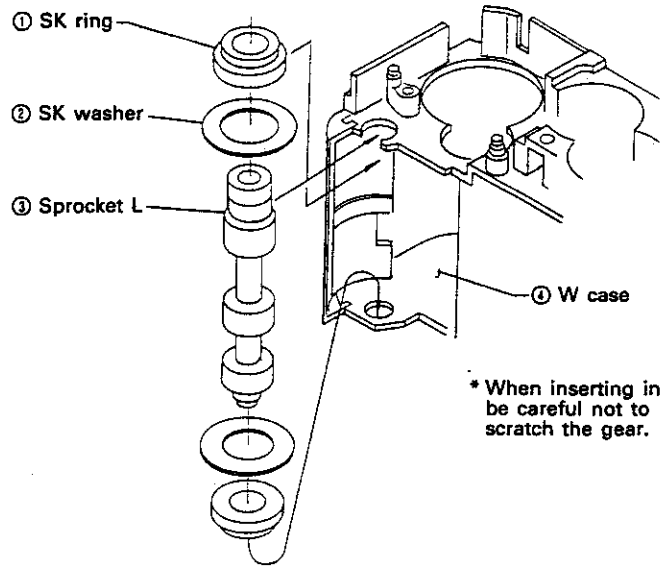
- Assemble ① W6 gear (CF5024) and ② carrier W (CU3706) in place.

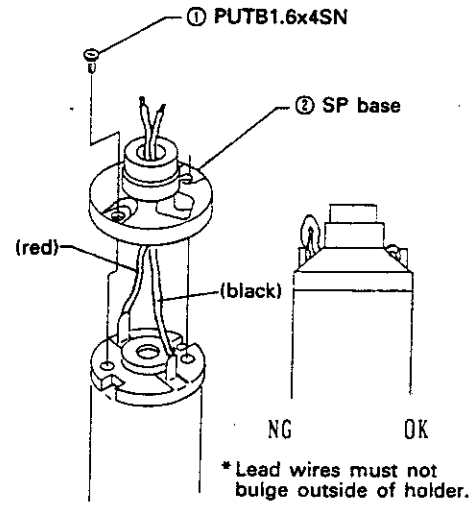


- Assemble ② W 7 gear in place.
- Assemble by snapping ① W base plate 2 into place.



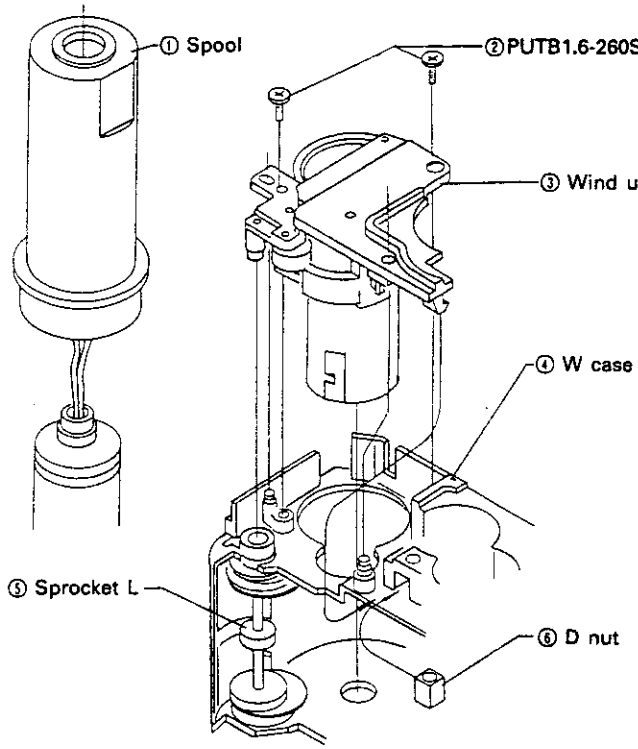
- Assemble ③ guide plate 2 (CU3758) into ② W case (CF6804).
- Insert one end of ① guide shaft 2 (CF5032) and place ④ guide spring 2 (CF5031) on the outcoming end.
- Follow through by pushing ① guide shaft 2 (CF5032) in further.

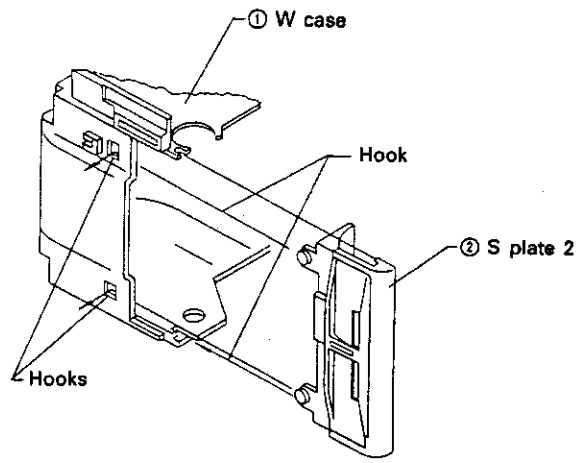




- Put ① SK ring (CF6818) and ② SK washer (CF6819) on both ends of ③ sprocket L (CF6803).
- Being careful not to drop any parts, set this inside ④ W case (CF6804).

- Pass lead wires through ② holder (CF3395) and push flush onto motor.
- Do not let lead wires bulge outside of ② holder (CF3395).
- Fasten with PUTB1.6x4SN.

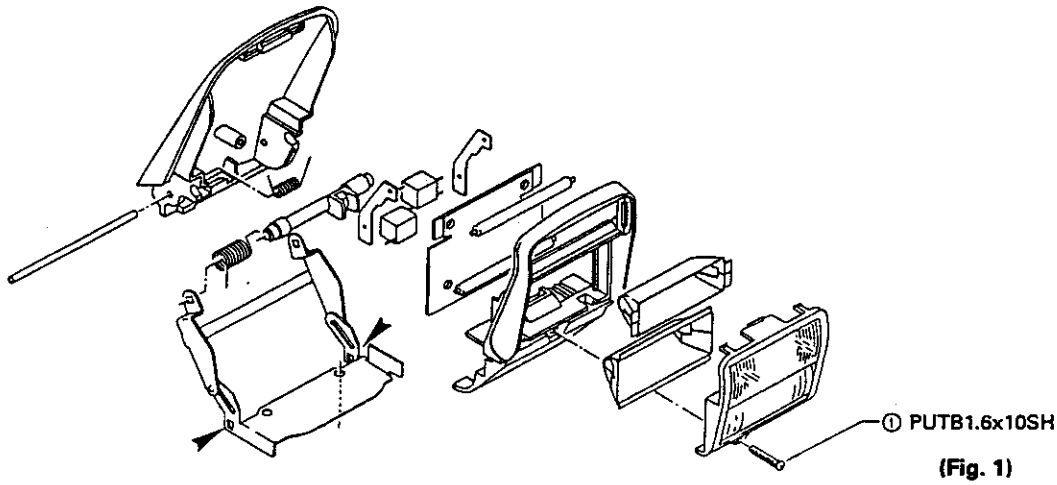




- Pass lead wires through ① spool (CF5038) and cover spool over motor.
- Assemble ③ wind up unit on ④ W case (CF6804) keeping clear of the guide plates.
- Fasten with ② PUTB1.6-260SN (2)

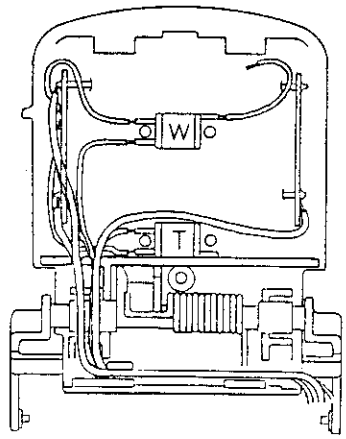
- Snap ② S plate (CF6805) onto ① W case (CF6804) at the two hooks.

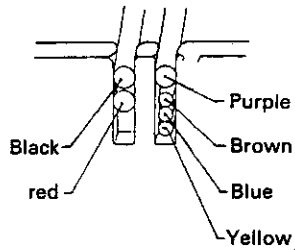
※ 6. Assembling the flash unit



(Fig. 1)

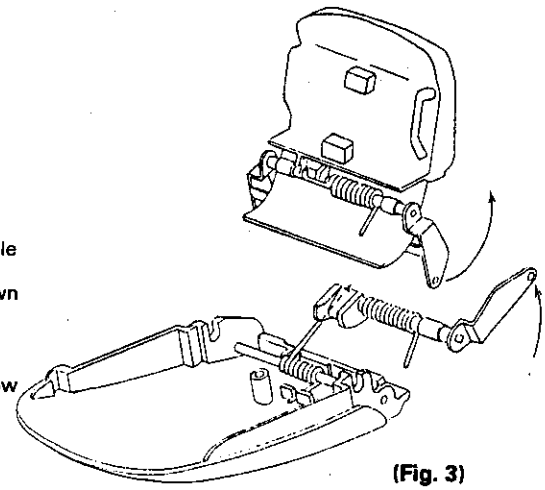
● Assemble all components.





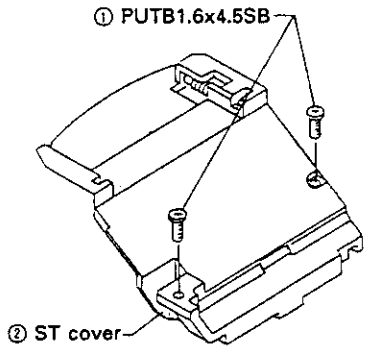
(Fig. 2)

● Pull all lead wires through and form.

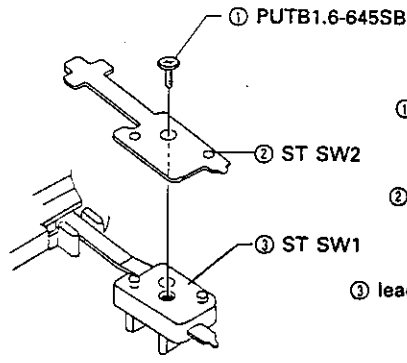


(Fig. 3)

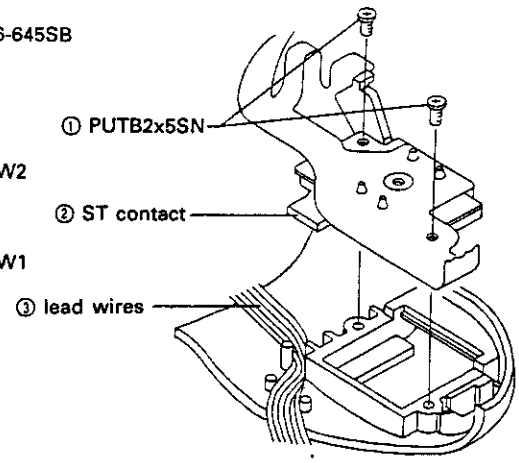
● Rest spring on groove shown in Fig. 3.



● Assemble ② ST cover (CF7475).
● Fasten in place with ① PUTB1.6x4.5SB (2).

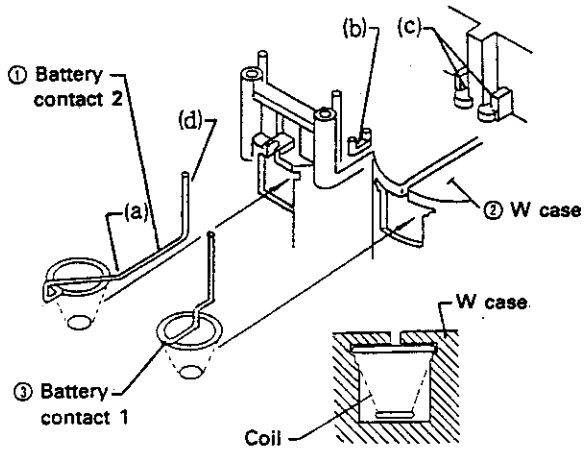


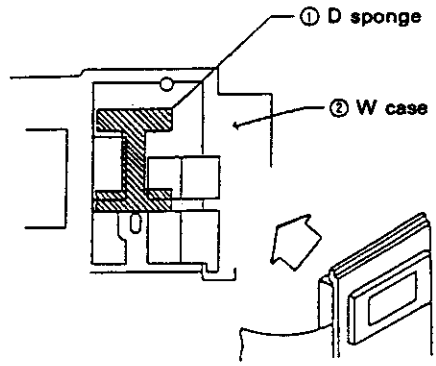
● Assemble being careful not to deform the contact.



● Form ③ lead wires and assemble parts in order.

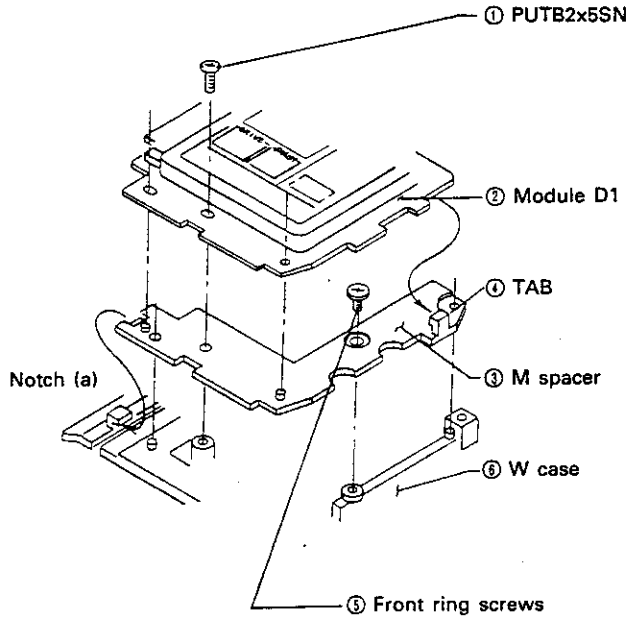
※ 7. Assembling the rear cover

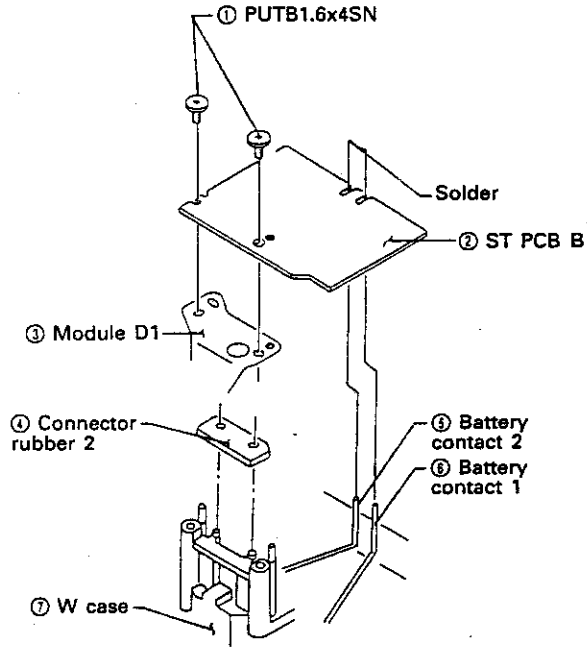




- Assemble ① battery contact 2 and ③ battery contact 1 in ② W case.
- Place a of ① battery contact 2 into b of ② W case.
- Place d of ③ battery contact 1 and ① battery contact 2 in c of ② W case.

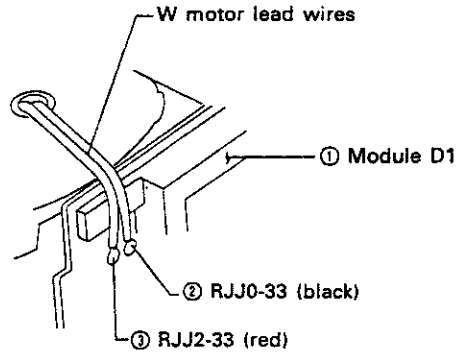
- Attach ① D sponge to ② W case.
- Adjust printing position of module D1 and adhere to date sponge.

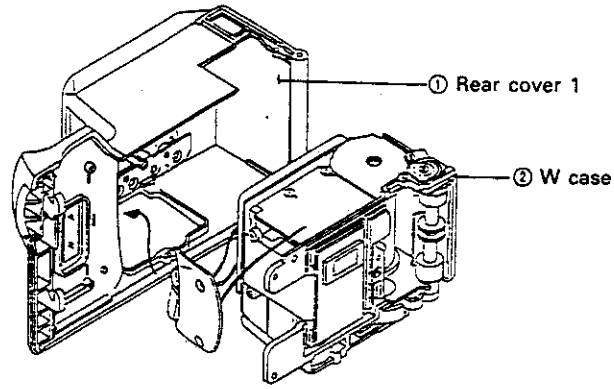




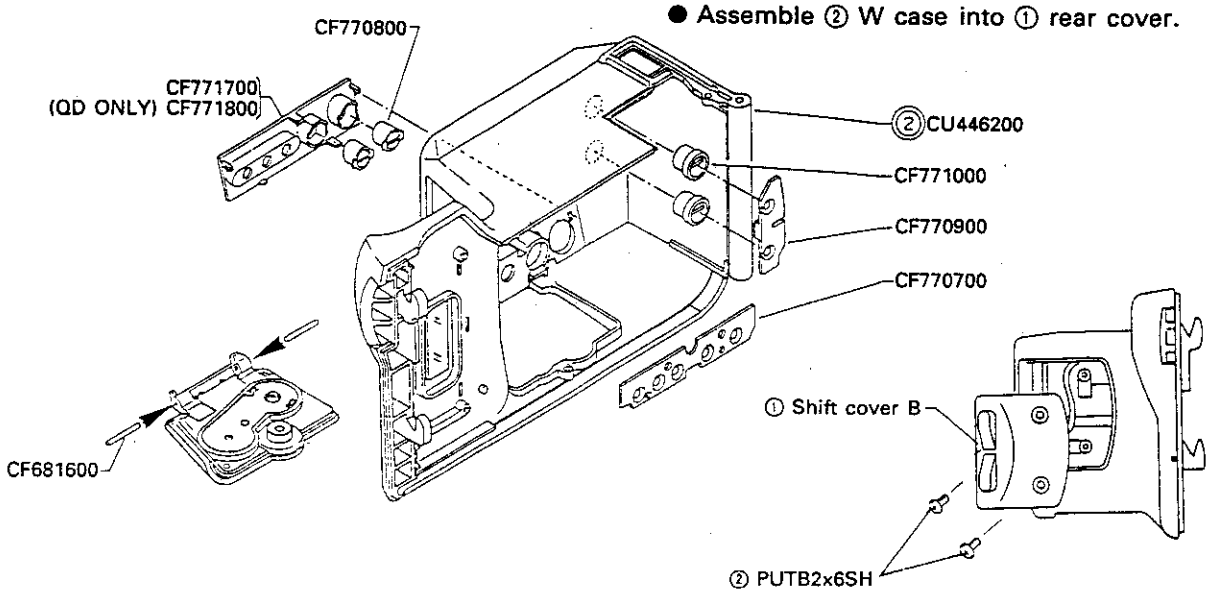
- Press ③ M spacer in notch a of ⑥ W case and fasten in place with ⑤ front ring screw.
- Place ② module D1 over tabs on ③ M spacer and fasten in place with ① PUTB2x5SN.

- Assemble in the order indicated above and fasten in place with ① PUTB1.6x4SN.
- Solder ⑤ battery contact 2 and ⑥ battery contact 1 to ② ST PCB B.





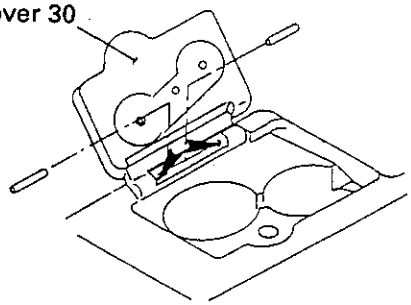
● Assemble ② W case into ① rear cover.



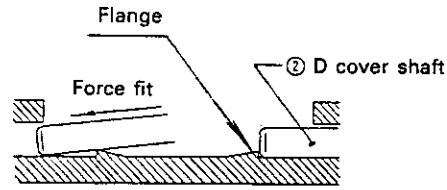
● Snap CF771700 (CF771800) in place and assemble buttons (CF7708, CF7710) and rubber pieces (CF7707, CF7709).
● Insert B cover shaft into D cover 30 from the side and set inside the groove in rear cover 1.

※When only replacing the battery cover

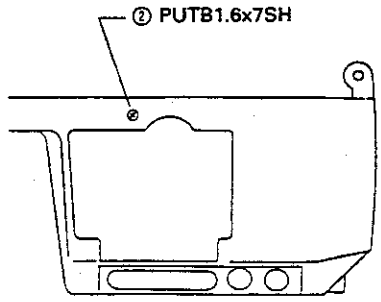
● ① D cover 30

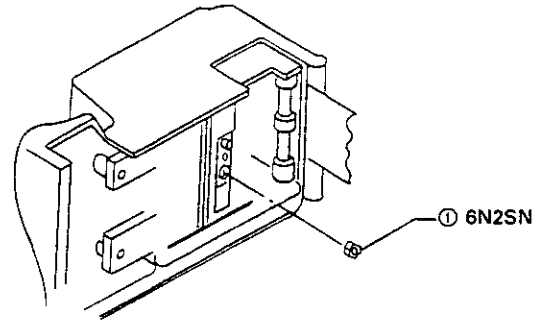


● Fasten ① shift cover B onto ① rear cover 1 with 2 PUTB2x6SH.

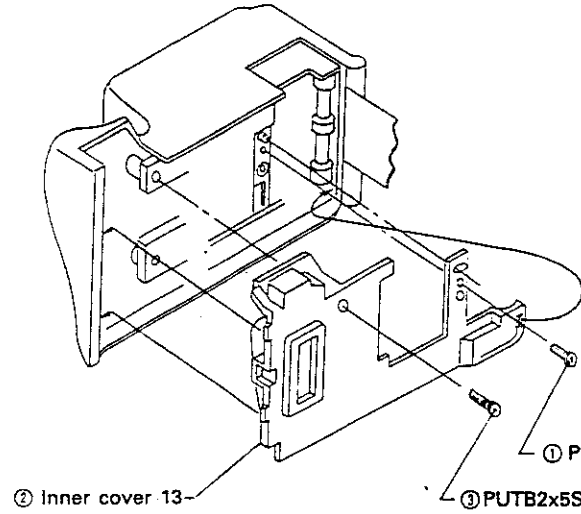


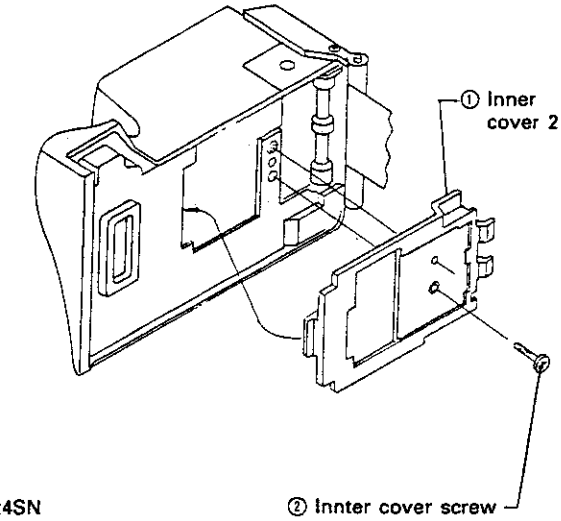
● Cut the flange off ① D cover 30.
● Take ② B cover shaft off by pulling inwards.
● Install the new battery cover.
● Force fit ② B cover shaft.
● Apply cement (black) between flange of ① D cover 30 and ② B cover shaft.





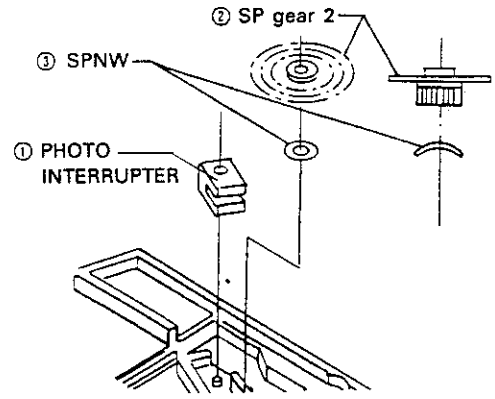
- Fasten with ② PUTB1.6x7SH.
- Drop ① 6N2SN (nut) in hole.

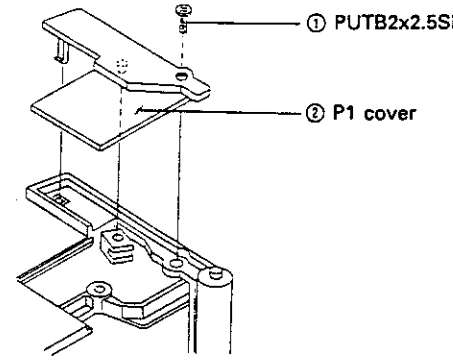




- Insert the spool side of ② inner cover 13 first, and then snap the P window in place.
- Fasten with ① PUTB2x4SN, ③ PUTB2x5SH.

- Snap the tabs on the spool side of ① inner cover 2 into place.
- Fasten with ② inner cover screw.





- Assemble ① photo interrupter, ③ SPNW, and ② SP GEAR 2.

- Snap the hook of ② P1 cover into place.
- Fasten with ① PUTB2x2.5SH.

ADJUSTMENT PROCEDURES USING THE CK-2 CHECKER

※Do adjustment procedures ⑥ through ⑰ after replacing the M PCB.
※Check adjustment procedures ③ through ⑰ after replacing the M PCB. Correct if not within specifications.
※If you replace a part related to any of these adjustments, make sure you perform the adjustment as well.

ADJUSTMENT PROCEDURE

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① ZP Adjustment (Calculating the ZP washer thickness) Adjustment mode ------ 13

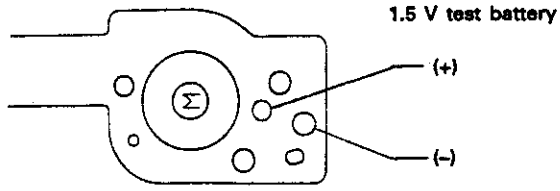
※ The purpose of this adjustment is to minimize the zoom movement between Tele and Wide. This mechanical adjustment relies on the thickness of the ZP washer. Perform as necessary after replacing any part in the lens barrel.

<Adjustment procedures>

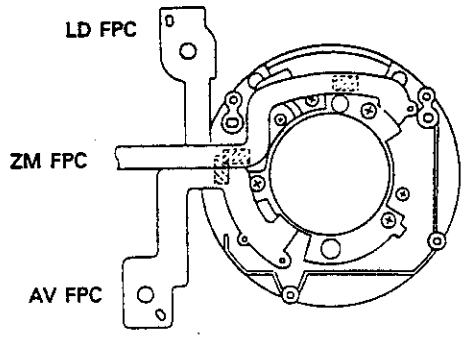
※ The FC washer must be removed before making this adjustment.

1. Insert a 0.5 mm ZP washer between the 1G frame and 2G ring.
2. Disassemble to leave just the lens barrel assembly without the main body and the front cover.
3. Connect a 1.5 V test battery to the AF motor solder land on the LD FPC (CF7631). The focus ring will move to ∞. ..... (Fig 1.)

※ As soon the ring hits the ∞ position, remove the battery (where the motor stops).

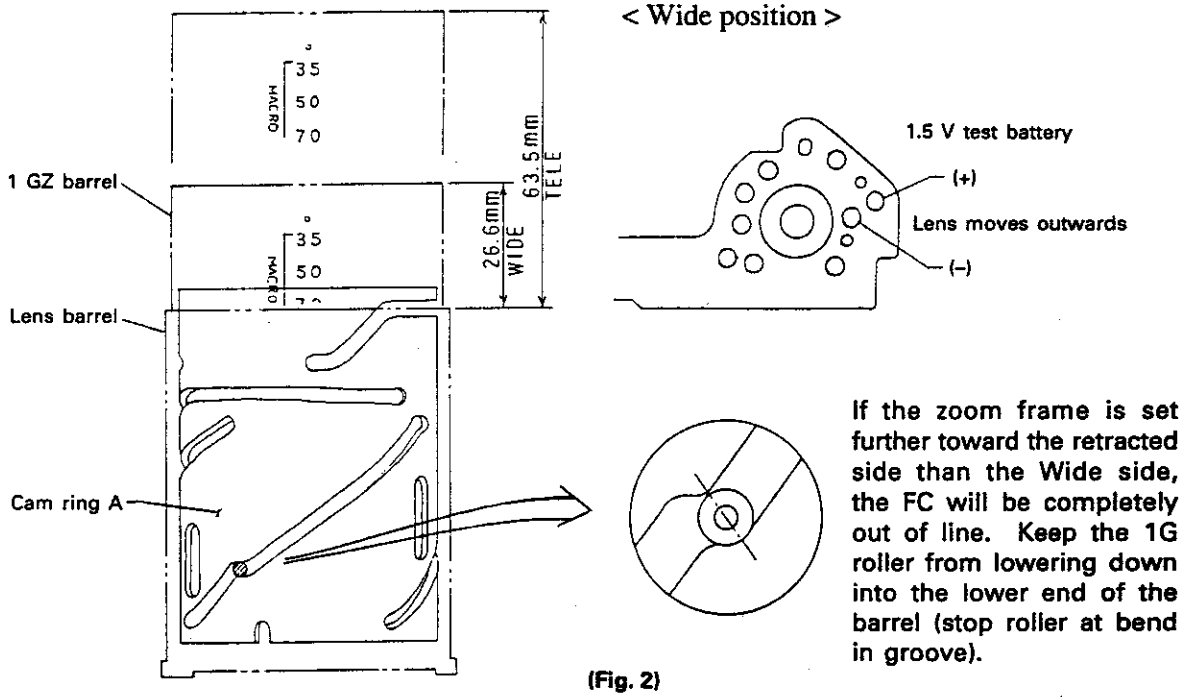


※ Do not reverse the poles when connecting.



(Fig. 1)

4. Move the zoom to the Wide end by connecting a 1.5 V test battery to the Z motor. The cam grooves cannot be viewed from the outside so set to the position in Figure 2 while measuring the dimensions indicated. ..... (Fig. 2)



If the zoom frame is set further toward the retracted side than the Wide side, the FC will be completely out of line. Keep the 1G roller from lowering down into the lower end of the barrel (stop roller at bend in groove).

(Fig. 2)

5. Attach the L3FC jig (KC0197) to the lens barrel which is set to the Wide position. ..... (Fig. 1)

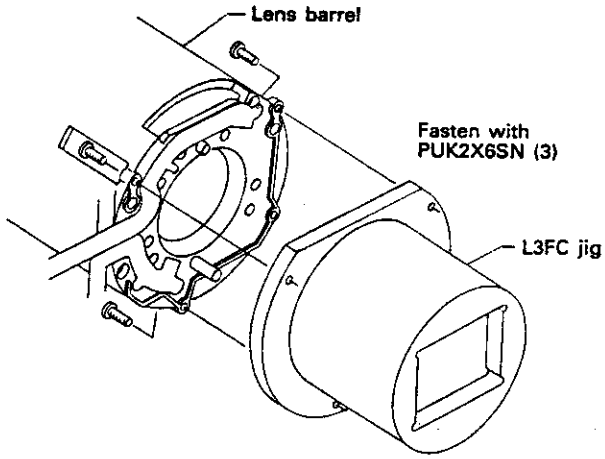
   ※Leave the FC washer off.

   - Be careful not to scratch the guide shaft with the L3FC jig.
   - Align the screw holes and fasten in place with PUK2x6SN (3).

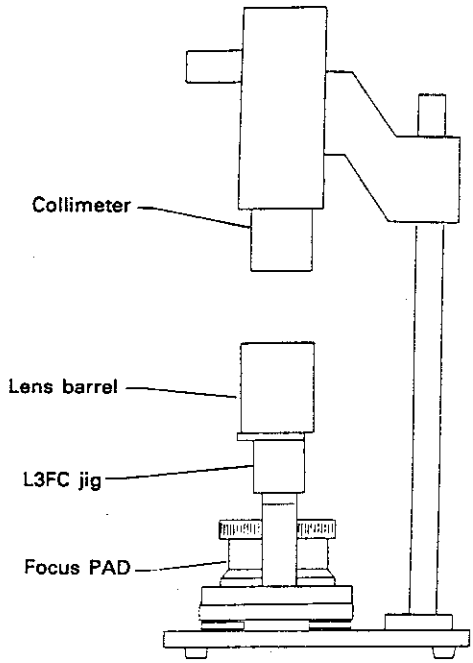
6. Check the focus adjustment with a collimeter. Jot down any error. (Fig. 2)
   Reference: + 0.05 mm

7. Move to the Tele side using the same procedure described for the Wide side.

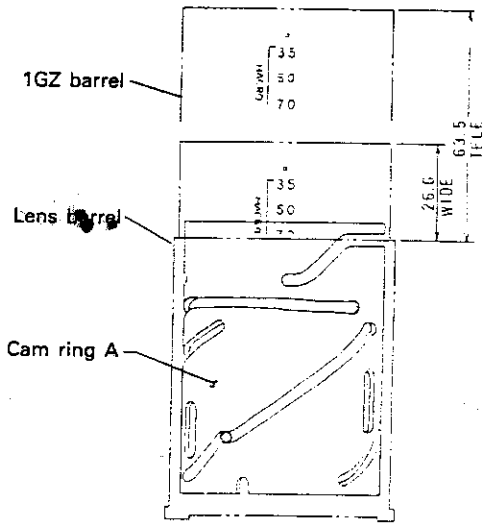
   <Tele position>
   The 1 GZ barrel should protrude 63.5 mm from the lens barrel (or at the very end of the Tele side) as shown in Fig. 3.



(Fig. 1)



(Fig. 2)



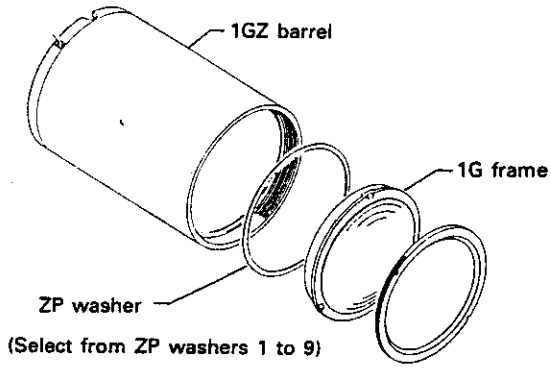
(Fig. 3)

8. Check the focus adjustment with a collimeter. Jot down any error.
   Reference: + 0.05 mm

9. Calculate the thickness for the ZP washer with the CK-2 checker.

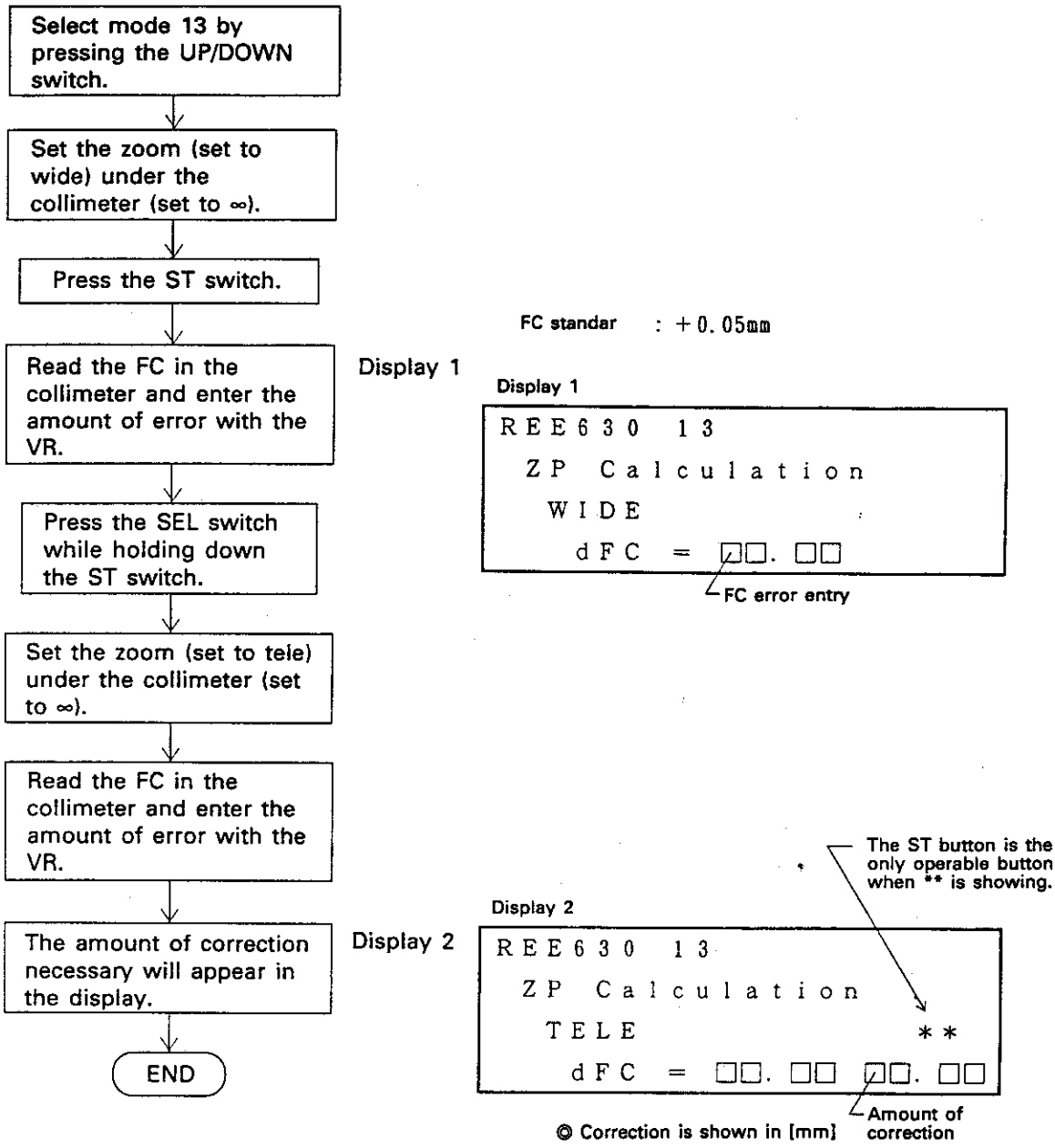
   ◎Follow these procedures

   - Select a ZP washer or combine washers to match the calculated thickness. Insert between the 1GZ barrel and 1G frame. (Fig. 4)



(Fig. 4)

< CK-2 operation for calculating ZP washer thickness >


Select mode 13 by pressing the UP/DOWN switch.
Set the zoom (set to wide) under the collimeter (set to ∞).
Press the ST switch.
Read the FC in the collimeter and enter the amount of error with the VR.
Press the SEL switch while holding down the ST switch.
Set the zoom (set to tele) under the collimeter (set to ∞).
Read the FC in the collimeter and enter the amount of error with the VR.
The amount of correction necessary will appear in the display.
END
FC standar : +0.05mm
Display 1
Display 1
REE630 13
ZP Calculation
WIDE
dFC = □□. □□
FC error entry
Display 2
The ST button is the only operable button when ** is showing.
Display 2
REE630 13
ZP Calculation
TELE **
dFC = □□. □□ □□. □□
Amount of correction
◎ Correction is shown in [mm]

Note : A reference ZP washer (0.5 mm) is already installed; therefore the correction value that appears on the CK-2 is based on 0.5 mm.

Example : If the correction value indicates - 0.2, you would add a ZP washer thickness of 0.3 mm (ZP washer 7); 0.5 – 0.2 = 0.3.
Remove the reference ZP washer and insert the new ZP washer (0.3 mm)

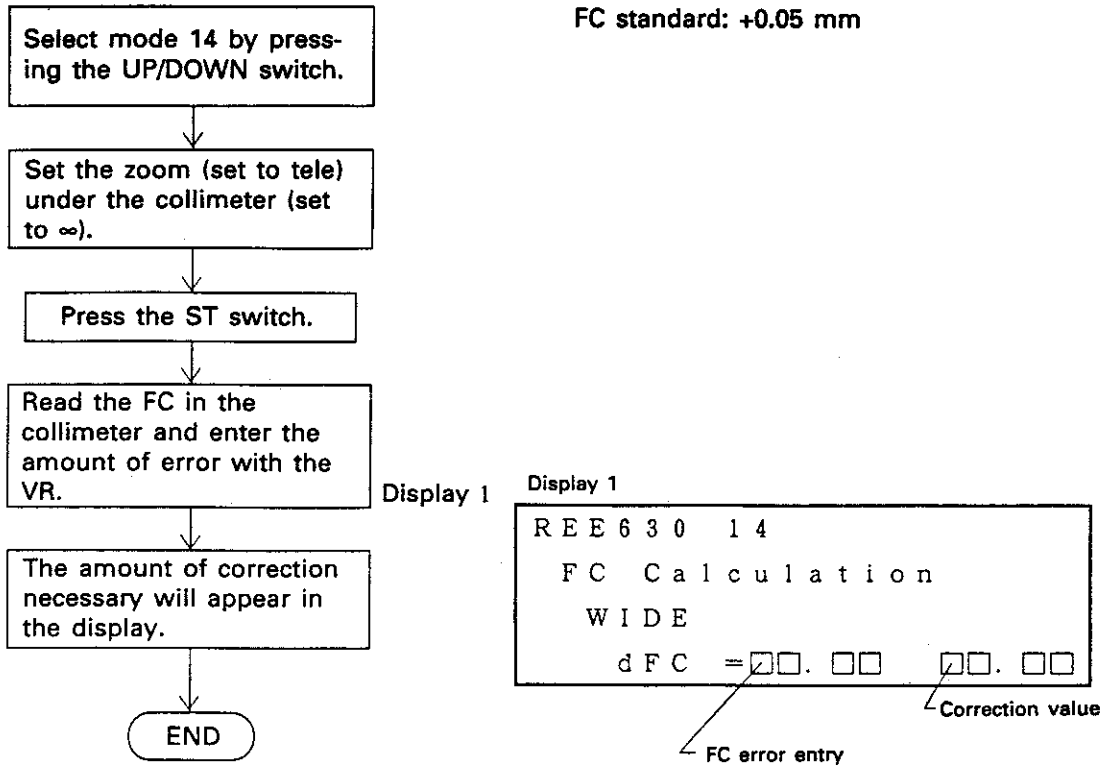
Type	Part No.	Thickness [mm]	Type	Part No.	Thickness [mm]
ZP washer 1	CF755200	0.10	ZP washer 5	CF755600	0.18
ZP washer 2	CF755300	0.12	ZP washer 6	CF755700	0.20
ZP washer 3	CF755400	0.14	ZP washer 7	CF755800	0.30
ZP washer 4	CF755500	0.16	ZP washer 8	CF755900	0.40
			ZP washer 9	CF756800	0.50

② FC Adjustment (Calculating the FC washer thickness) ------- 14

◎ After calculating the proper thickness for the ZP washer, and/or after installing the ZP washer, calculate the thickness for the FC washer.

◎ Use the same procedures for the ZP washer to calculate and install the FC washer; i.e., L3FC jig and collimeter, adjust only on Wide side.

FC standard: +0.05 mm

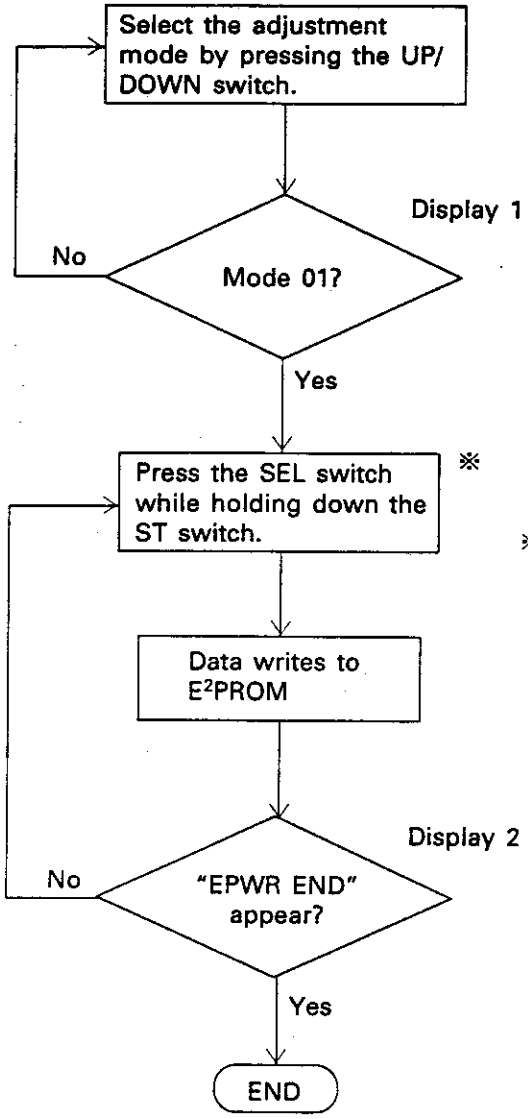

Select mode 14 by pressing the UP/DOWN switch.
Set the zoom (set to tele) under the collimeter (set to ∞).
Press the ST switch.
Read the FC in the collimeter and enter the amount of error with the VR.
Display 1
The amount of correction necessary will appear in the display.
END
Display 1
REE630 14
FC Calculation
WIDE
dFC =□□. □□ □□. □□
Correction value
FC error entry

◎ The correction value will be in [mm].

Type	Part No.	Thickness [mm]
FC washer 1	CF756000	0.06
FC washer 2	CF756100	0.08
FC washer 3	CF756200	0.10
FC washer 4	CF756300	0.12
FC washer 5	CF756400	0.14
FC washer 6	CF756500	0.20
FC washer 7	CF756600	0.30
FC washer 8	CF756700	0.40

③ Initializing the E²PROM Adjustment mode ——— 01

◎ This process writes initial data to all addresses in the E²PROM.



Display 1
Japan, OE, outher foreign regions.

```
REE630 01
EEPROM initiarize
start-sw on  is-3000
 & sel-sw on L3
```

North America

```
REE630 01
EEPROM initiarize
  start-sw on
   & sel-sw on  is-3
```

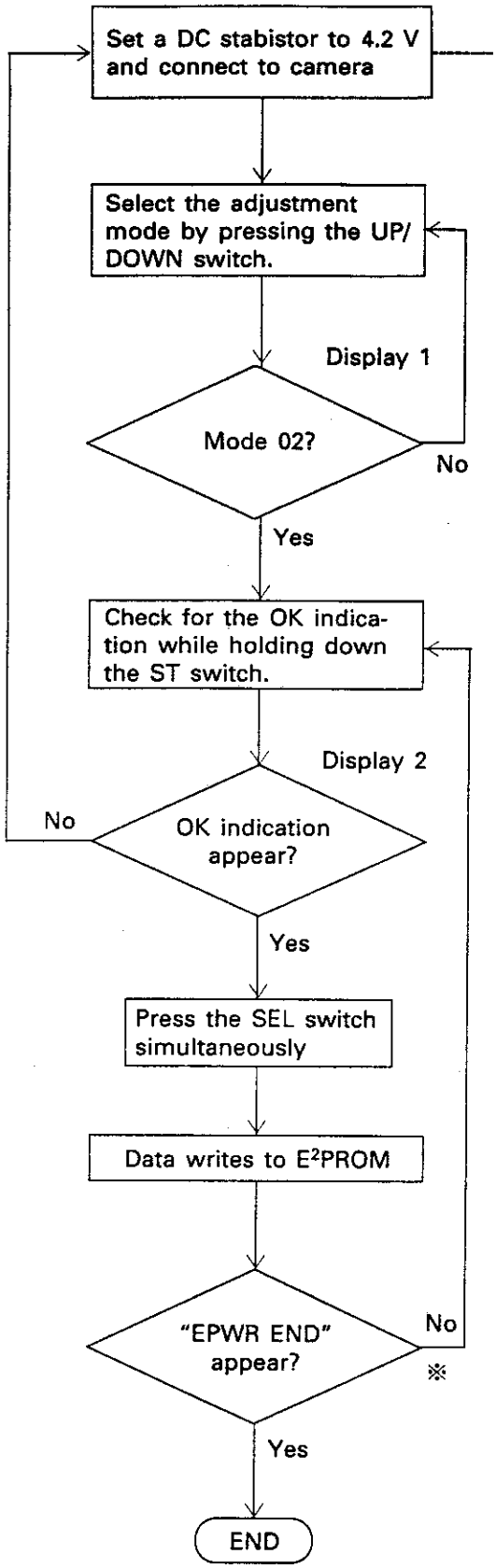
Display 2

```
REE630 01   EPWR END
EEPROM initiarize
start-sw on  is-3000
 & sel-sw on L3
```

```
REE630 01   EPWR END
EEPROM initiarize
  start-sw on
   & sel-sw on  is-3
```

※ If you keep you finger on the ST switch, the "EPWR END" in the 2nd display will show "PUSH SEL" instead.

④ Battery Check Voltage Adjustment ------- 02



Connect a stabistor charged to approx. 5 V to the camera. Turn the camera ON and gradually lower the voltage to 4.2 V.

Display 1

```
REE630  02
   B. C.  Adj
     Camera  Vcc=4. 2V
      [  ] [  ] [  ] [  ]
```

Display 2

OK/NG indication

```
REE630  02
   B. C.  Adj          OK
     Camera  Vcc=4. 2V
      [□□] [□□] [□□] [□□]
```

E²PROM data

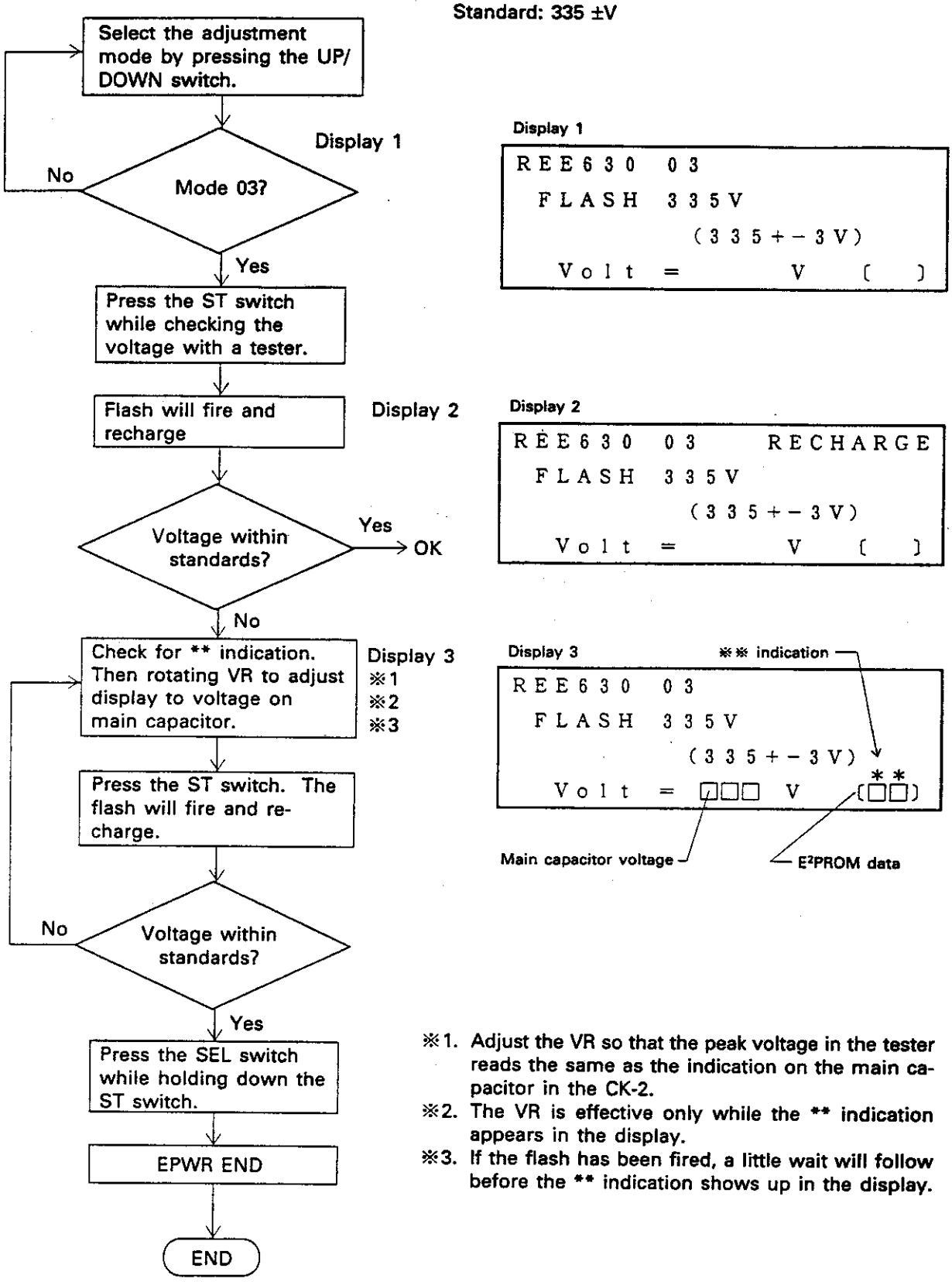
※"END" will flash twice.

☆ To check the adjustment, turn the CK-2 OFF and slowly raise the stabistor voltage to 5 V. Then turn the cam POWER switch OFF. Turn the camera POWER switch back ON, and slowly lower the stabistor voltage to 4.55 V ±0.15 V. Do the battery check. The mark should flash. Lower further to 4.2 V ±0.15 V. The mark should now be constantly lit.

⑤ Flash Charging Voltage Adjustment (to 335 V) ——— 03

◎ To make this adjustment, you have to remove the grip so that you can measure the voltage at the main capacitor discharge terminals on the ST PCB F with a tester.

Standard: 335 ±V



※1. Adjust the VR so that the peak voltage in the tester reads the same as the indication on the main capacitor in the CK-2.

※2. The VR is effective only while the ** indication appears in the display.

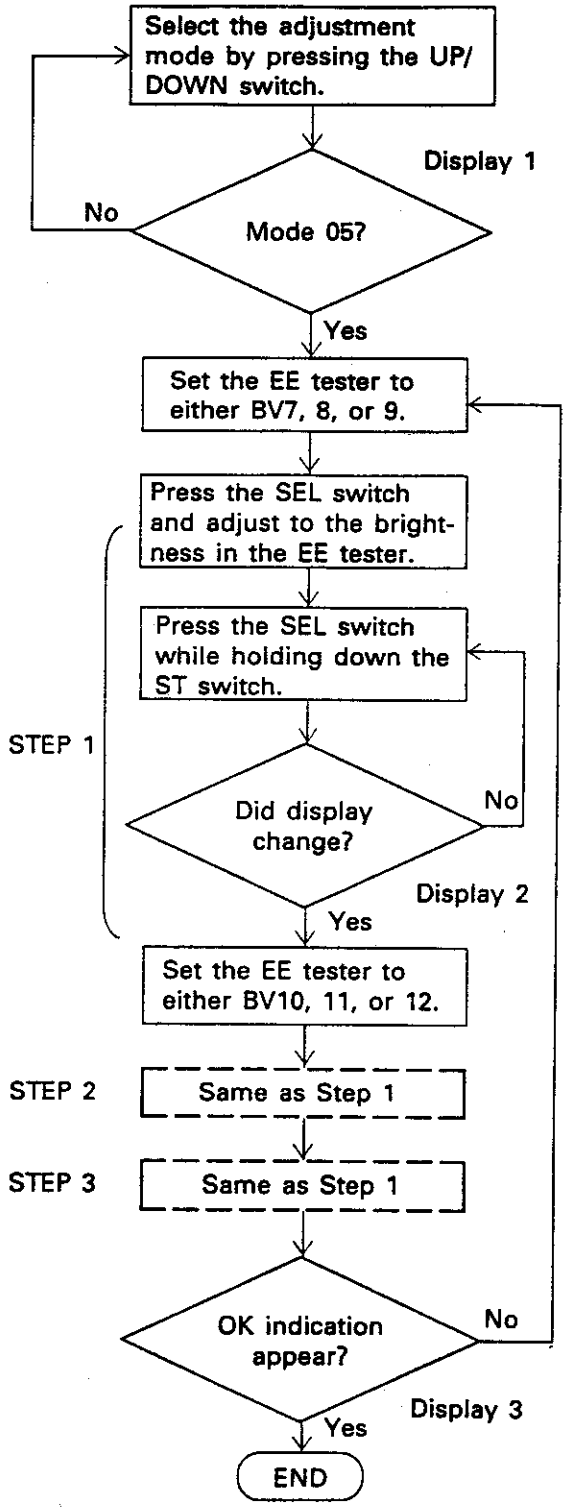
※3. If the flash has been fired, a little wait will follow before the ** indication shows up in the display.

⑥ Metering Adjustment (Average) ——— 04

★ Equipment used: EE tester

★ If after several tries, the Kyoritsu EF8000 EE Tester does not display OK in either metering or checking modes, put an ND2 filter on the camera and do the adjustment again. When using the ND2 filter for adjustment modes 05, 06, and 07, leave the filter on between adjustments.

※ See D-52, 53, 54, and 55 for adjustments using the ND2 filter.



※Close the rear cover of the camera to shut out all light from outside, particularly from entering the viewfinder.

Display 1

```
REE630  04.□
 BV  A  Adj
  STEP1  Bv=7
   [  ] [  ]
```

Display 2 — Changes when SEL switch is pressed

```
REE630  04.□
 BV  A  Adj
  STEP2  Bv=□
   [  ] [  ]
```

Selected brightness

Display 3

```
REE630  04.□  EPWR  END
 BV  A  Adj
  STEP3  Bv=15        OK
   [□□] [□□] [□□] [□□]
```

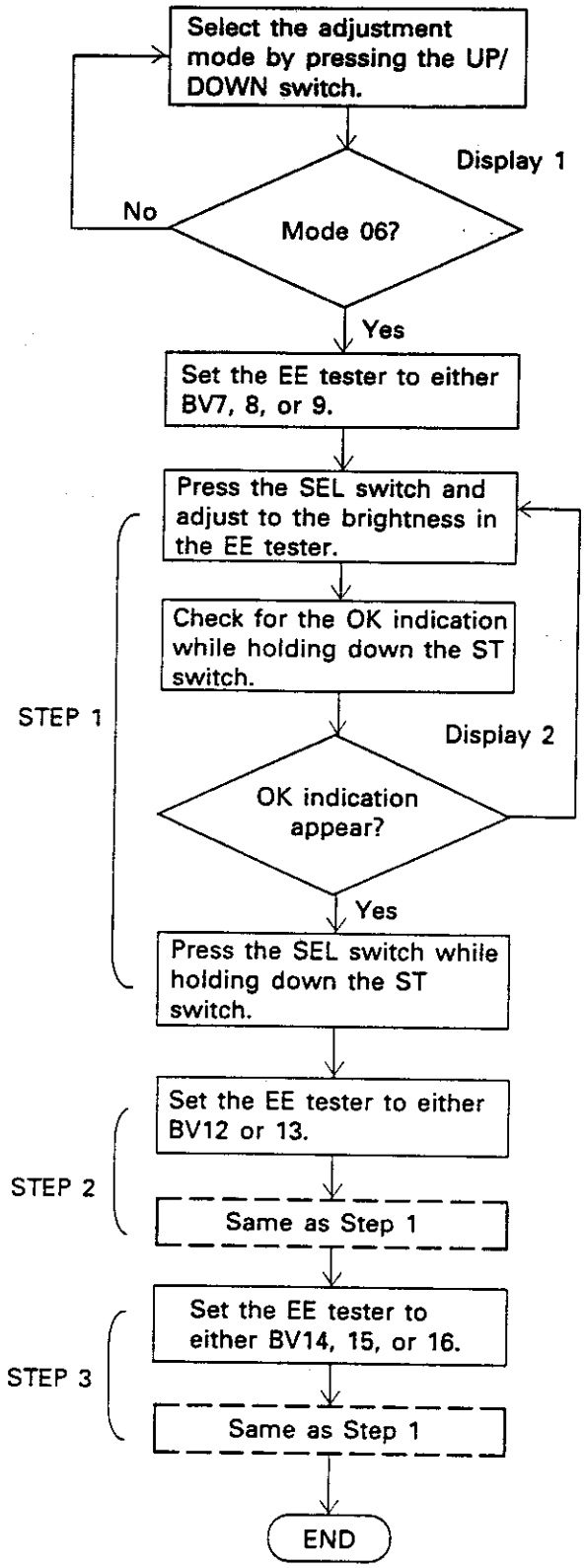
E²PROM data — OK/NG indication

☆ Select distinctly different brightness values for Step 1 and 3.

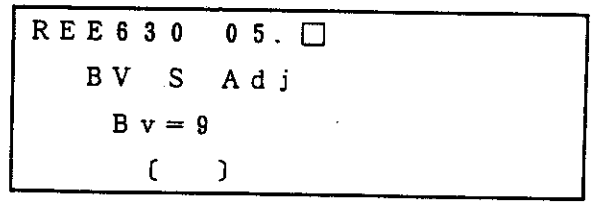
⑦ Metering Adjustment (Spot) ------- 05

◎ The same precautions for adjustment mode 05 apply; close the rear cover of the camera to shut out all light.

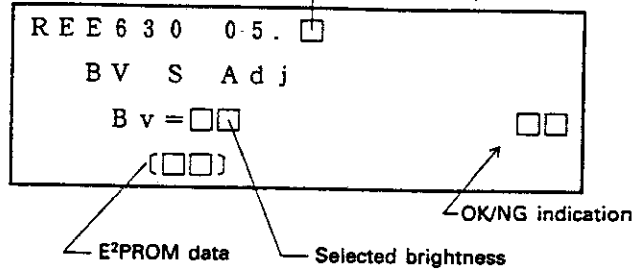
Equipment used: EE tester


Select the adjustment mode by pressing the UP/ DOWN switch.
Display 1
No
Mode 06?
Yes
Set the EE tester to either BV7, 8, or 9.
Press the SEL switch and adjust to the brightness in the EE tester.
Check for the OK indication while holding down the ST switch.
STEP 1
Display 2
OK indication appear?
Yes
Press the SEL switch while holding down the ST switch.
Set the EE tester to either BV12 or 13.
STEP 2
Same as Step 1
Set the EE tester to either BV14, 15, or 16.
STEP 3
Same as Step 1
END

Display 1



Display 2

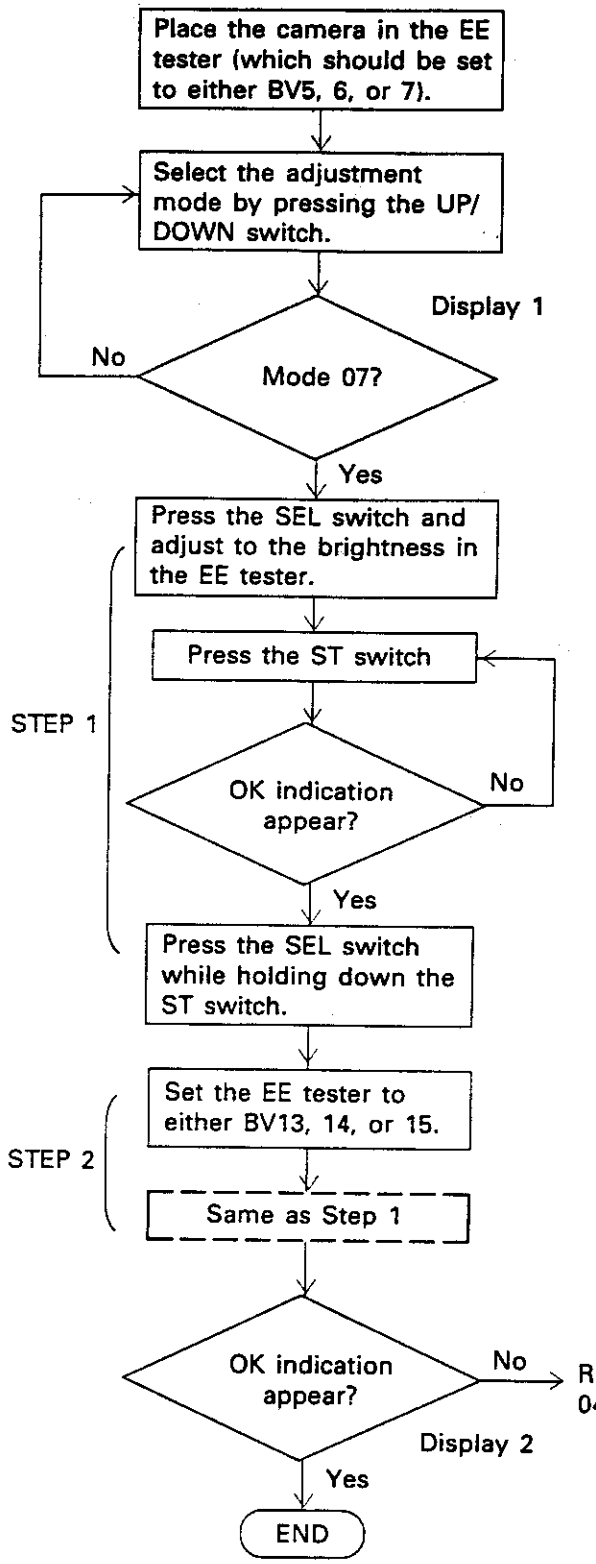


☆ It is common for NG to appear so repeat the checking procedure a few times as explained in mode 04.

⑧ Checking the Metering Adjustment ——— 06

◎ This is the mode for checking the average metering and spot metering adjustments. Place the camera in the EE tester and shut out all light.

☆ It is common for NG to appear so repeat the checking procedure a few times as explained in mode 04. Also, select distinctly different brightness values for Step 1 and 2.


Place the camera in the EE tester (which should be set to either BV5, 6, or 7).
Select the adjustment mode by pressing the UP/ DOWN switch.
Display 1
No
Mode 07?
Yes
Press the SEL switch and adjust to the brightness in the EE tester.
Press the ST switch
STEP 1
OK indication appear?
No
Yes
Press the SEL switch while holding down the ST switch.
Set the EE tester to either BV13, 14, or 15.
STEP 2
Same as Step 1
OK indication appear?
No
Readjust modes 04 and 05
Display 2
Yes
END

Display 1

```
REE630  06.0
 BV Check
  STEP1  Bv=5
   [  ] [  ] [  ]
```

Display 2

```
REE630  06·□
 BV Check
  STEP2  Bv=□□  BVA □□
   [  ] [  ] [  ] BVS □□
```

OK/NG indication

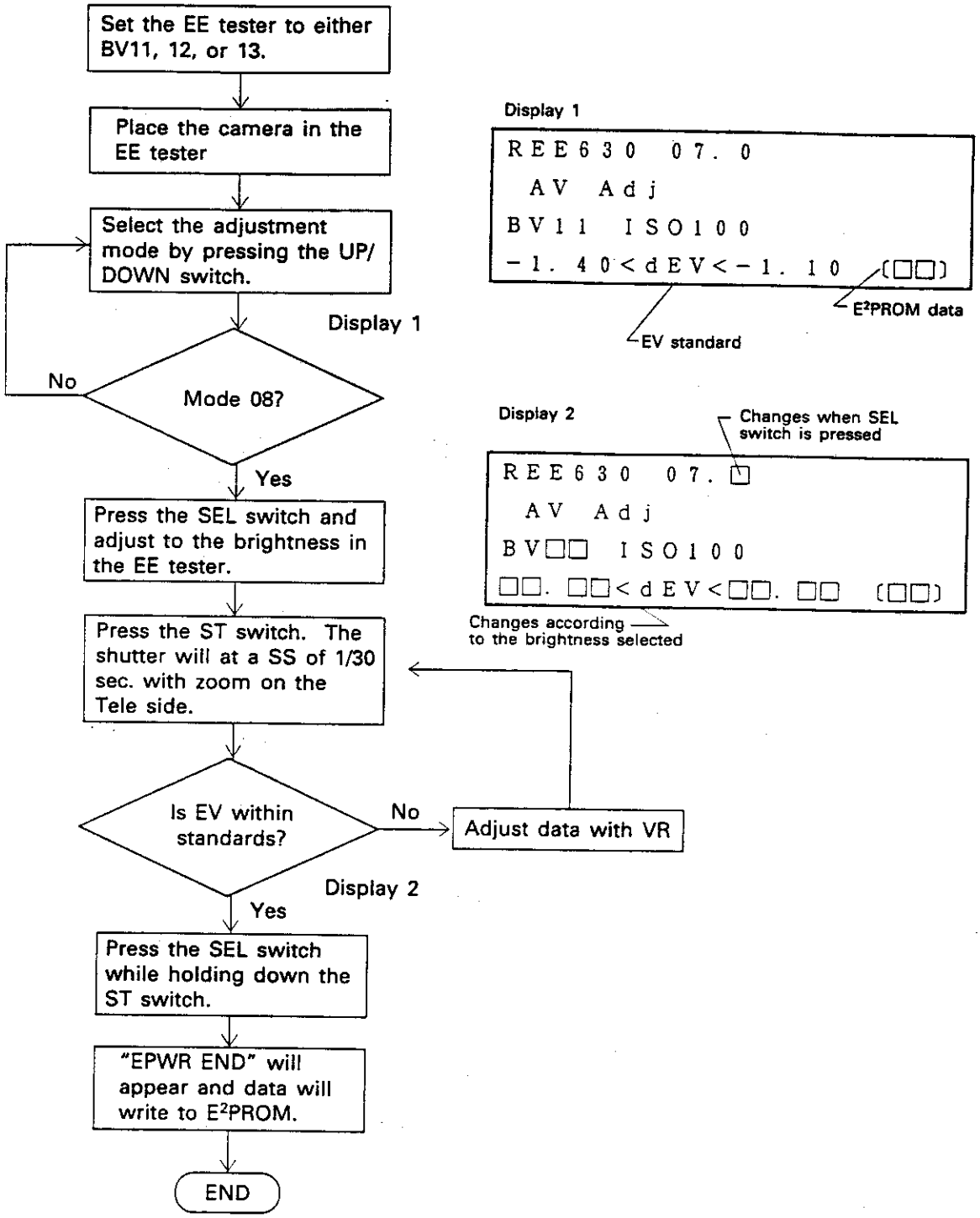
E²PROM data

⑨ Aperture adjustments ------- 07

◎ Zoom Wide end, measure AV value at 1/30 sec using EV value on EE tester.

EV adjustment standards
- BV11 ISO100 : −1.40 to −1.10EV
- BV12 ISO100 : −0.40 to −0.10EV
- BV13 ISO100 : +0.60 to +0.90EV

K = 1.3 (OM)

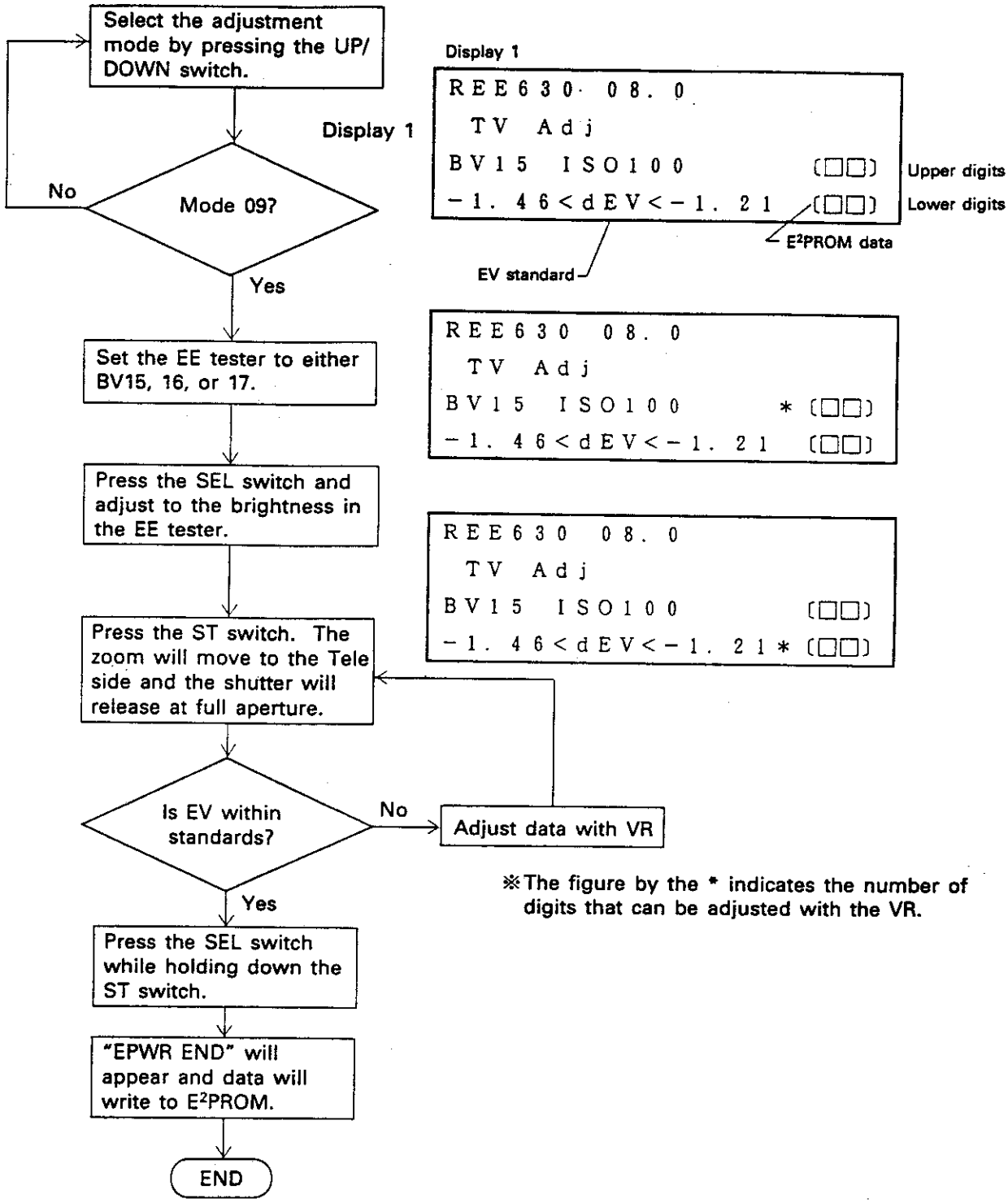

Set the EE tester to either BV11, 12, or 13.
Place the camera in the EE tester
Select the adjustment mode by pressing the UP/ DOWN switch.
Display 1
No
Mode 08?
Yes
Press the SEL switch and adjust to the brightness in the EE tester.
Press the ST switch. The shutter will at a SS of 1/30 sec. with zoom on the Tele side.
Is EV within standards?
No
Adjust data with VR
Display 2
Yes
Press the SEL switch while holding down the ST switch.
"EPWR END" will appear and data will write to E²PROM.
END
Display 1
REE630 07.0
AV Adj
BV11 ISO100
−1.40<dEV<−1.10 (□□)
E²PROM data
EV standard
Display 2
Changes when SEL switch is pressed
REE630 07.□
AV Adj
BV□□ ISO100
□□.□□<dEV<□□.□□ (□□)
Changes according to the brightness selected

⑩ Shutter 1/2000 sec Adjustment ——— 08

◎ Zoom at Tele end, measure with aperture open and shutter speed at 1/2000 using EV value on EE tester.

EV Standards
- BV15 ISO100 : −1.46 to −1.21EV
- BV16 ISO100 : −0.46 to −0.21EV
- BV17 ISO100 : +0.54 to +0.79EV

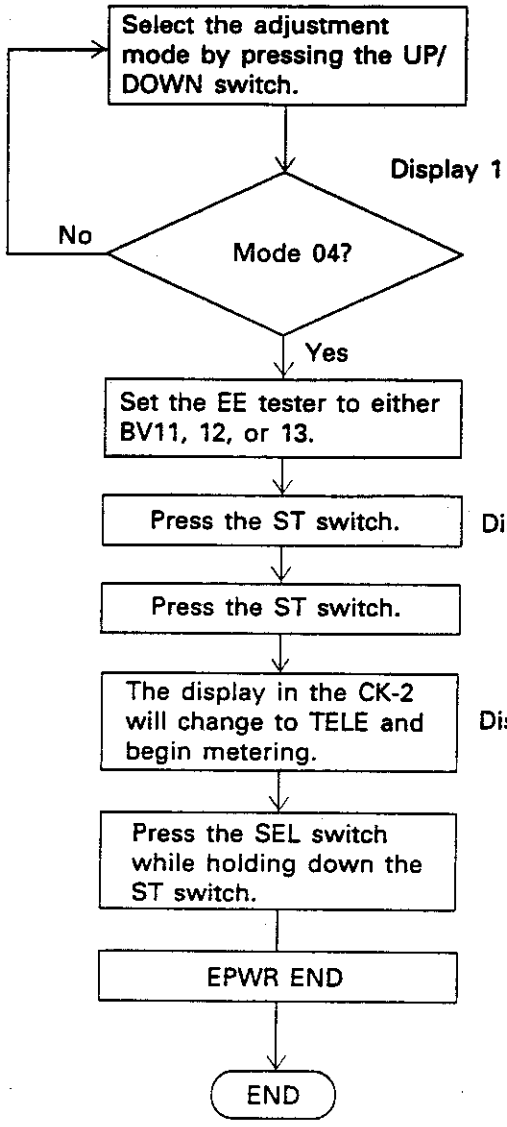
K = 1.3 (OM)


Select the adjustment mode by pressing the UP/ DOWN switch.
Display 1
Mode 09?
No
Yes
Set the EE tester to either BV15, 16, or 17.
Press the SEL switch and adjust to the brightness in the EE tester.
Press the ST switch. The zoom will move to the Tele side and the shutter will release at full aperture.
Is EV within standards?
No
Adjust data with VR
Yes
Press the SEL switch while holding down the ST switch.
"EPWR END" will appear and data will write to E²PROM.
END
Display 1
REE630 08.0
TV Adj
BV15 ISO100 (□□)
−1.46<dEV<−1.21 (□□)
Upper digits
Lower digits
E²PROM data
EV standard
REE630 08.0
TV Adj
BV15 ISO100 * (□□)
−1.46<dEV<−1.21 (□□)
REE630 08.0
TV Adj
BV15 ISO100 (□□)
−1.46<dEV<−1.21* (□□)

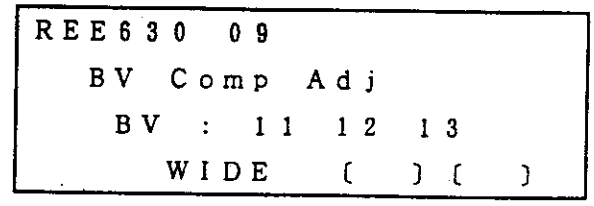
※The figure by the * indicates the number of digits that can be adjusted with the VR.

⑪ Lens Focus Point Brightness Correction ——— 09

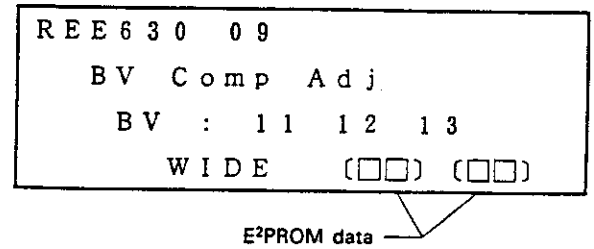
☆ Equipment used: EE tester


Select the adjustment mode by pressing the UP/ DOWN switch.
Display 1
No
Mode 04?
Yes
Set the EE tester to either BV11, 12, or 13.
Press the ST switch.
Display 2
Press the ST switch.
The display in the CK-2 will change to TELE and begin metering.
Display 3
Press the SEL switch while holding down the ST switch.
EPWR END
END

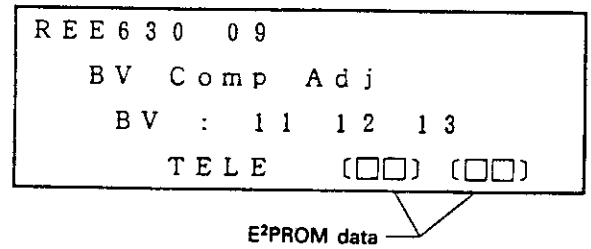
Display 1



Display 2



Display 3



※Close the rear cover of the camera to shut out all light from outside, particularly from entering the viewfinder.

※After adjusting modes 07, 08 and 09, check the camera alone using the EE tester. Repeat the Lens Focus Point Brightness Correction if not within specifications. Check at both Wide and Tele side under the following conditions: PF, ISO100 (press Self-timer and Spot buttons simultaneously), and ∞.

Exposure accuracy: for both Wide and Tele, BV7 to 15 0 ±1EV

⑫ AF Sensor Adjustment ------- 0A

◎ The purpose of this adjustment is to correct any deviation in the sensitivity of AF sensor.

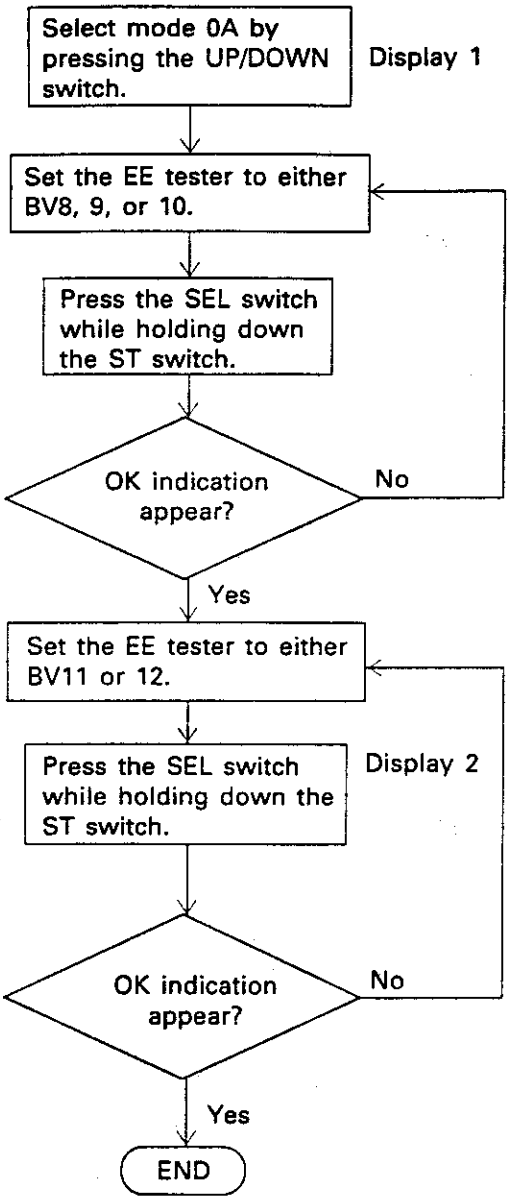
◎ The lighting surface inside the EE tester is 10 cm in diameter and must have a lighting consistency within 0.2 EV.

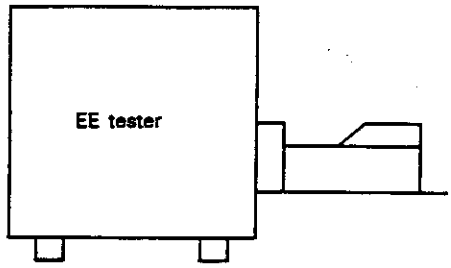
◎ Any dirt or scratches on the EE tester will cause fine lighting irregularities that can produce erroneous testing results.

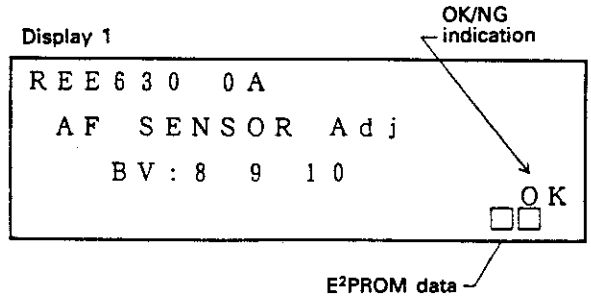
◎ Do not direct strong light sources to the lighting surface.

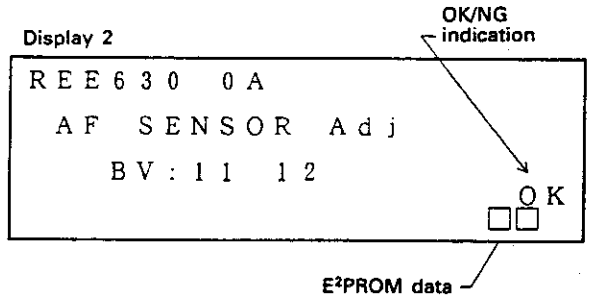
◎ Keep the camera close to the lighting surface and shut out any light to the eyepiece.

☆ Equipment used: EE tester


Select mode 0A by pressing the UP/DOWN switch.
Display 1
Set the EE tester to either BV8, 9, or 10.
Press the SEL switch while holding down the ST switch.
OK indication appear?
No
Yes
Set the EE tester to either BV11 or 12.
Press the SEL switch while holding down the ST switch.
Display 2
OK indication appear?
No
Yes
END





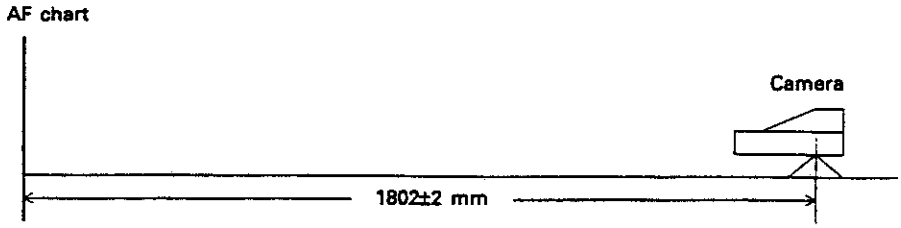


⑬ AF Adjustment -------- 0B

◎ This adjustment writes the distance between two images focused in the sensors to the E^2PROM.

<Preparation>

- After doing the AF Sensor adjustment, prepare a collimeter set to a reference value of -0.76 mm and a standard chart.
- The light on the chart should be of a fluorescent source between EV8 and 12.
- Position the camera so that the chart is 1.8 m away from the film.



Turn the Power switch ON. Set the camera under a collimeter set to -0.76 mm

↓

Select mode 0B by pressing the UP/DOWN switch. ※ 1 Display 1

↓

Press the ST switch. The zoom will move to the Wide position and the shutter will open.

↓

Look into the collimeter and enter the FC error with the VR ※ 2

↓

Adjustment OK? — No → Press the ST switch to close the shutter. (→ back to Press the ST switch. The zoom will move to the Wide position and the shutter will open.)

↓ Yes

Press the SEL switch while holding down the ST switch.

↓

The mirror will tilt down and the shutter will close.

↓

To next page

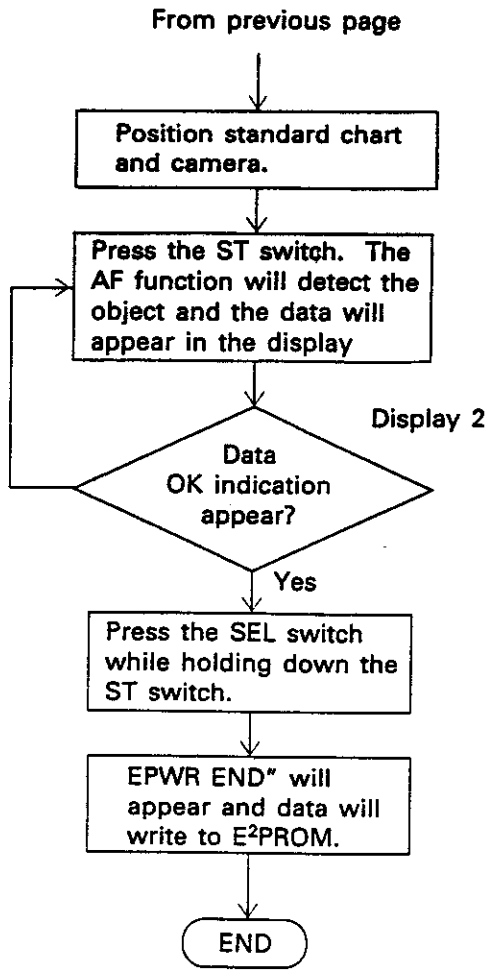
※1. The zoom position will move to Wide.

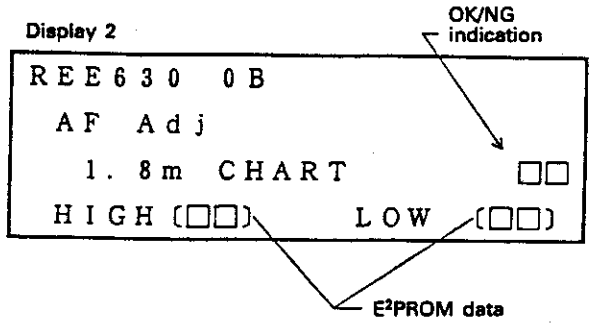
※2. FC standard: –0.76 ±0.05 mm. Enter the amount of error from -0.76 mm using the VR.

Display 1

```
REE630  0B
 AF  Adj
  1.8m  COLLIMATOR
  dFC = □□.□□  □□□□□
```

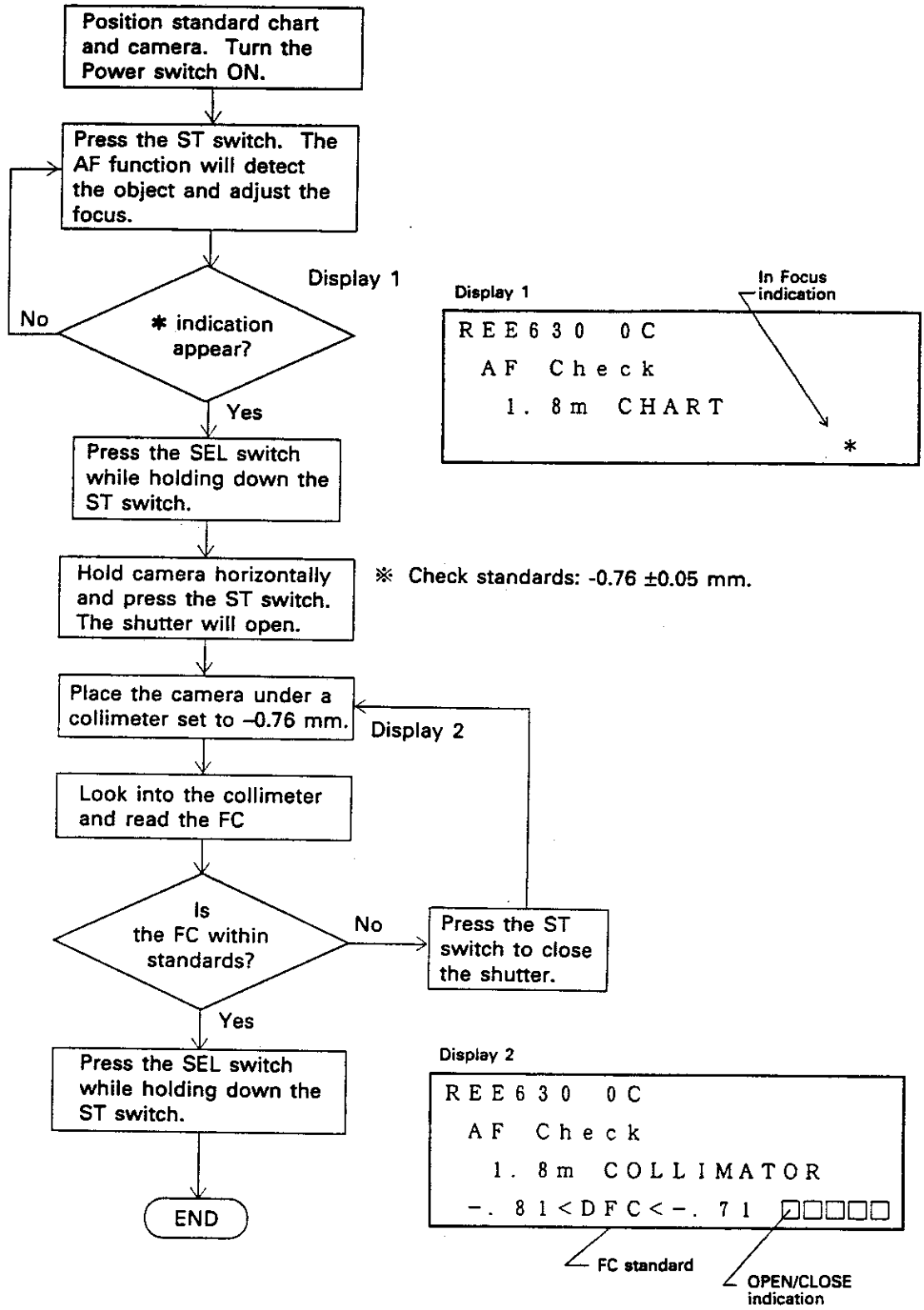
OPEN/CLOSE indication


From previous page
Position standard chart and camera.
Press the ST switch. The AF function will detect the object and the data will appear in the display
Display 2
Data OK indication appear?
Yes
Press the SEL switch while holding down the ST switch.
EPWR END" will appear and data will write to E²PROM.
END


Display 2
OK/NG indication
REE630 0B
AF Adj
1.8m CHART □□
HIGH (□□) LOW (□□)
E²PROM data

⑭ Checking the AF Adjustment ------ 0C

◎ Use the collimeter and AF chart set to the same conditions for the focus adjustment.


Position standard chart and camera. Turn the Power switch ON.
Press the ST switch. The AF function will detect the object and adjust the focus.
Display 1
No
* indication appear?
Yes
Press the SEL switch while holding down the ST switch.
Hold camera horizontally and press the ST switch. The shutter will open.
※ Check standards: -0.76 ±0.05 mm.
Place the camera under a collimeter set to –0.76 mm.
Display 2
Look into the collimeter and read the FC
Is the FC within standards?
No
Press the ST switch to close the shutter.
Yes
Press the SEL switch while holding down the ST switch.
END
Display 1
In Focus indication
REE630 0C
AF Check
1.8m CHART
*
Display 2
REE630 0C
AF Check
1.8m COLLIMATOR
-.81<DFC<-.71
FC standard
OPEN/CLOSE indication

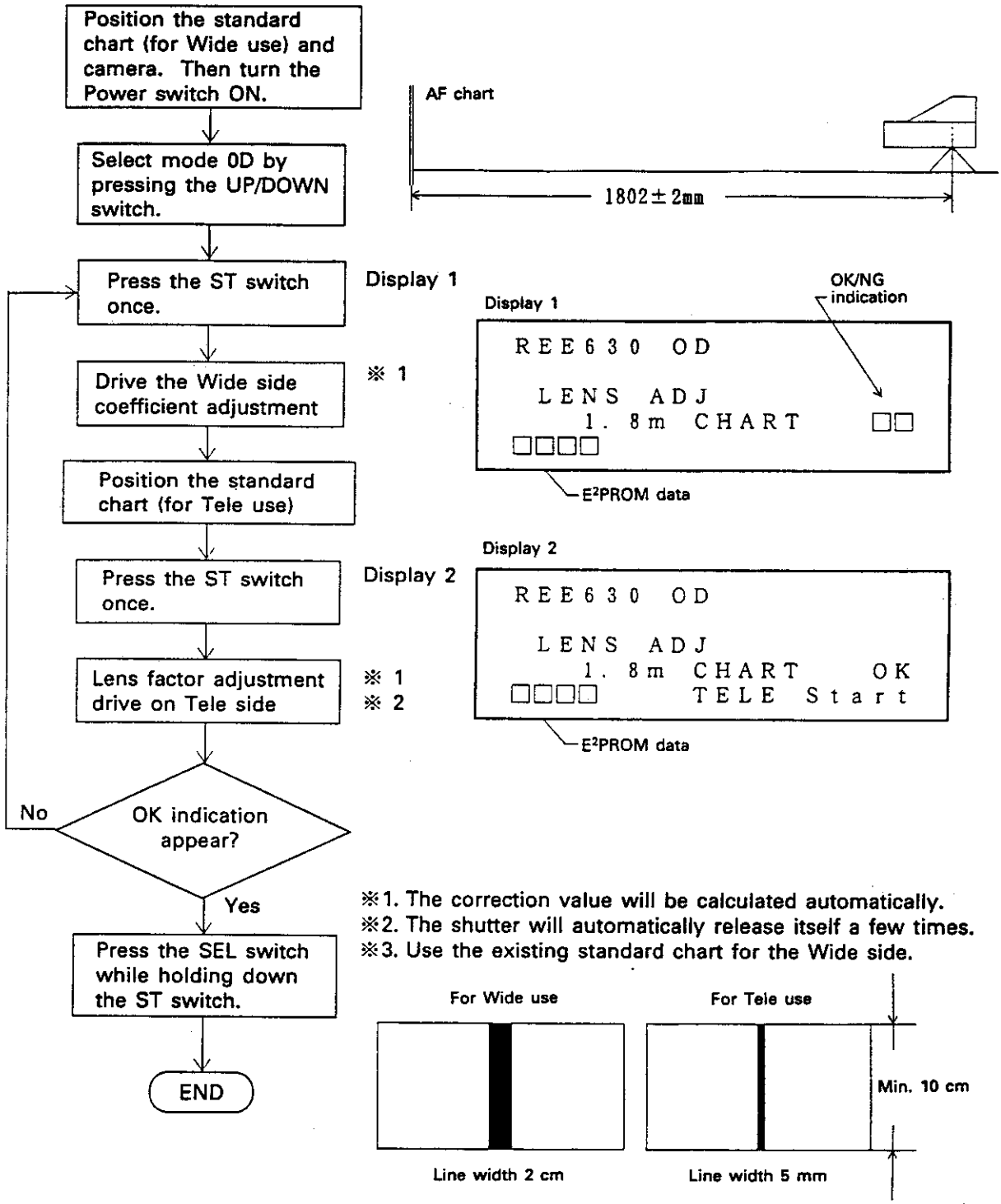
⑮ Lens Coefficient Adjustment ------- 0D

※ The purpose of this adjustment is to reduce the amount of AF error caused by the play in the lens barrel cam when the AF lens moves outwards.

※ Do this adjustment after replacing any part in the lens barrel.

<Preparation>

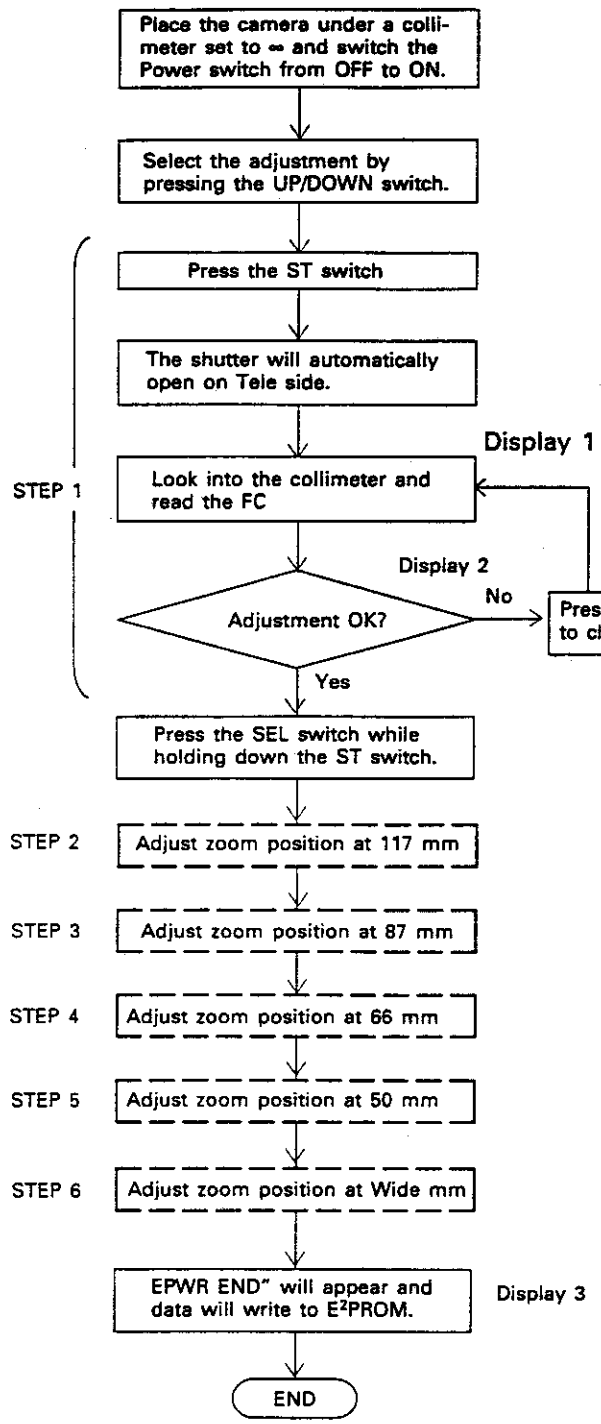
- Prepare a standard chart and set under a light source between EV8 and 12.
- Position the camera so that the chart is 1.8 m away from the film.



※1. The correction value will be calculated automatically.
※2. The shutter will automatically release itself a few times.
※3. Use the existing standard chart for the Wide side.

⑯ FC Adjustment ------- 0E

◎ The ZP and FC washer size calculations and assembly must be completed before doing this adjustment.

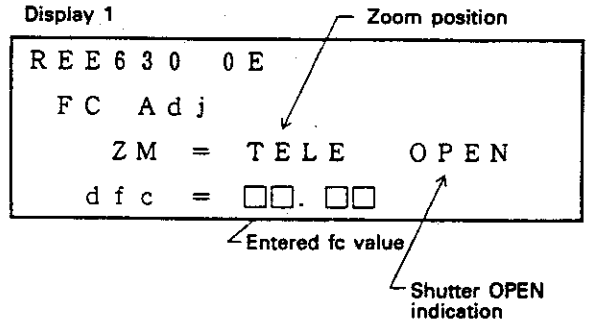

Place the camera under a collimeter set to ∞ and switch the Power switch from OFF to ON.
Select the adjustment by pressing the UP/DOWN switch.
Press the ST switch
The shutter will automatically open on Tele side.
STEP 1
Look into the collimeter and read the FC
Display 1
Display 2
Adjustment OK?
No
Press the ST switch to close the shutter.
Yes
Press the SEL switch while holding down the ST switch.
STEP 2
Adjust zoom position at 117 mm
STEP 3
Adjust zoom position at 87 mm
STEP 4
Adjust zoom position at 66 mm
STEP 5
Adjust zoom position at 50 mm
STEP 6
Adjust zoom position at Wide mm
EPWR END" will appear and data will write to E²PROM.
Display 3
END

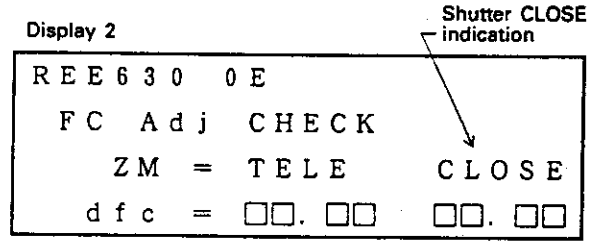
FC standards

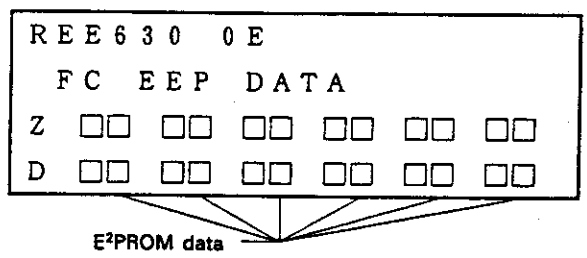
Zoom position	Standard (mm)
Tele End	+0.05
117 mm	+0.05
87 mm	+0.05
66 mm	+0.05
50 mm	+0.05
Wide End	+0.05

※ Press and hold down the ST switch until "PUSH SEL" appears in the display.

※ The FC adjustment check is only done on the Tele side.

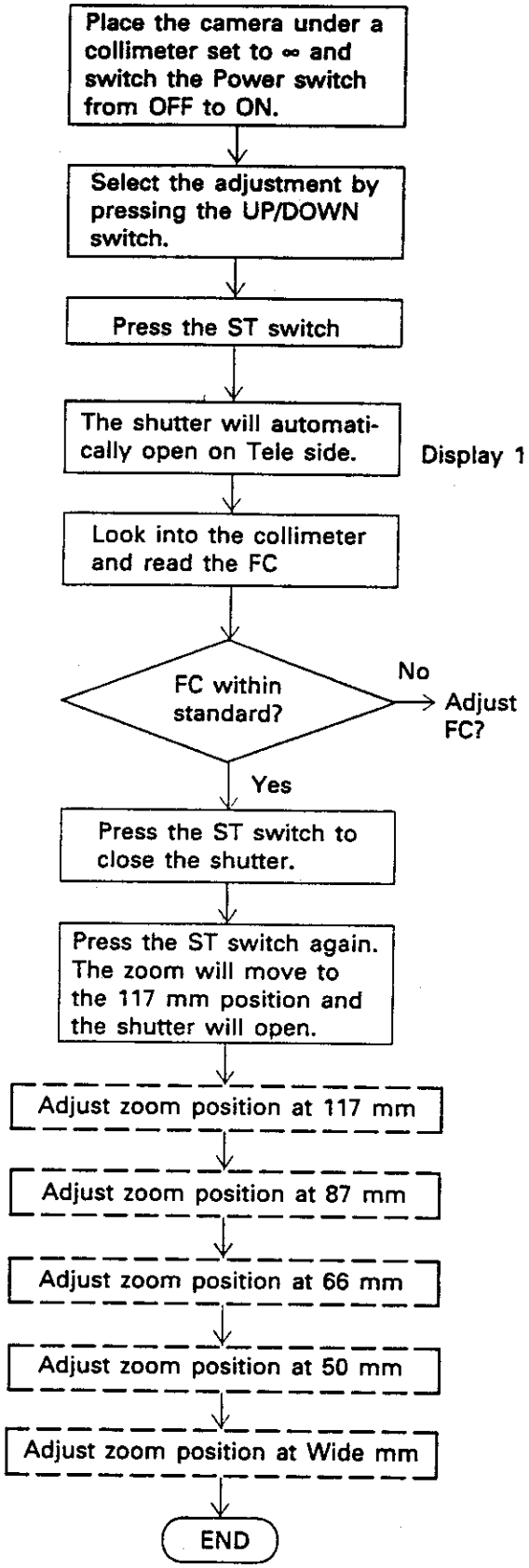






⑰ FC Check ——— 0F

◎ This checks the accuracy of the FC adjustment.

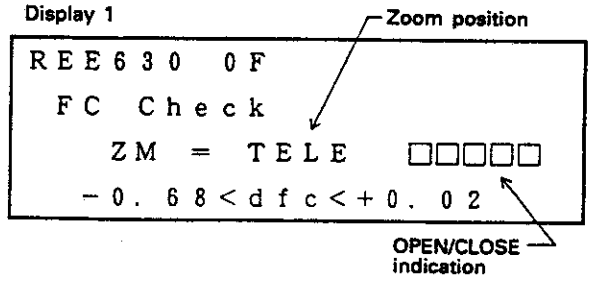

Place the camera under a collimeter set to ∞ and switch the Power switch from OFF to ON.
Select the adjustment by pressing the UP/DOWN switch.
Press the ST switch
The shutter will automatically open on Tele side.
Display 1
Look into the collimeter and read the FC
FC within standard?
No
Adjust FC?
Yes
Press the ST switch to close the shutter.
Press the ST switch again. The zoom will move to the 117 mm position and the shutter will open.
Adjust zoom position at 117 mm
Adjust zoom position at 87 mm
Adjust zoom position at 66 mm
Adjust zoom position at 50 mm
Adjust zoom position at Wide mm
END

FC Standards

Zoom Position	Standard (mm)
Tele end	–0.68 to +0.02
117 mm	–0.31 to +0.25
87 mm	–0.14 to +0.30
66 mm	–0.09 to +0.27
50 mm	–0.05 to +0.23
Wide end	–0.03 to +0.17

* These standards have been corrected to compensate for the difference in vertical and horizontal positions at each focusing distance.

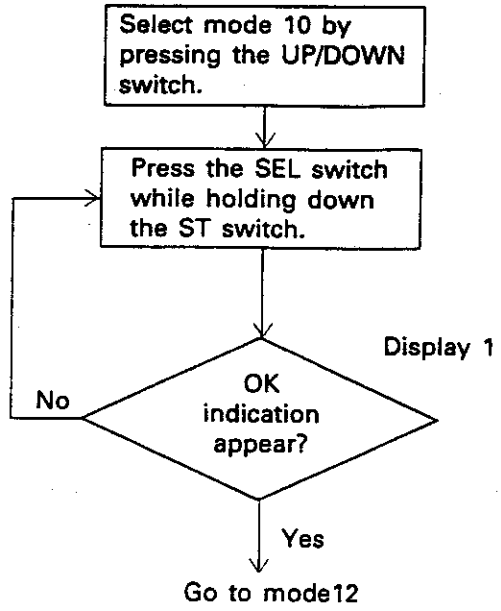
Display 1



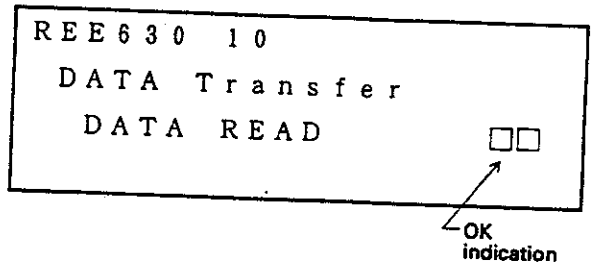
⑱ Reading Data from the E²PROM ------- 10

◎ When transferring all contents of the E²PROM, use this mode together with mode 11.

◎ Read data is retained in memory until the CK-2 power is turned OFF.

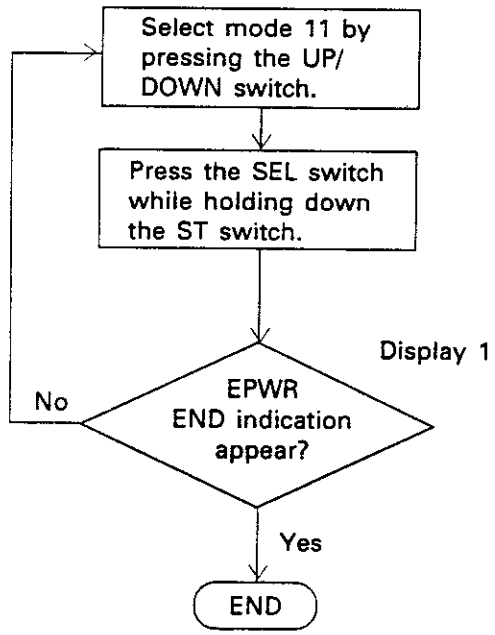

Select mode 10 by pressing the UP/DOWN switch.
Press the SEL switch while holding down the ST switch.
Display 1
No
OK indication appear?
Yes
Go to mode12

Display 1

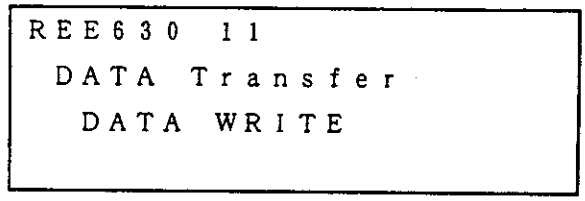


⑲ Writing Data to the EEPROM ------- 11

◎ This mode writes the data read in mode 10.

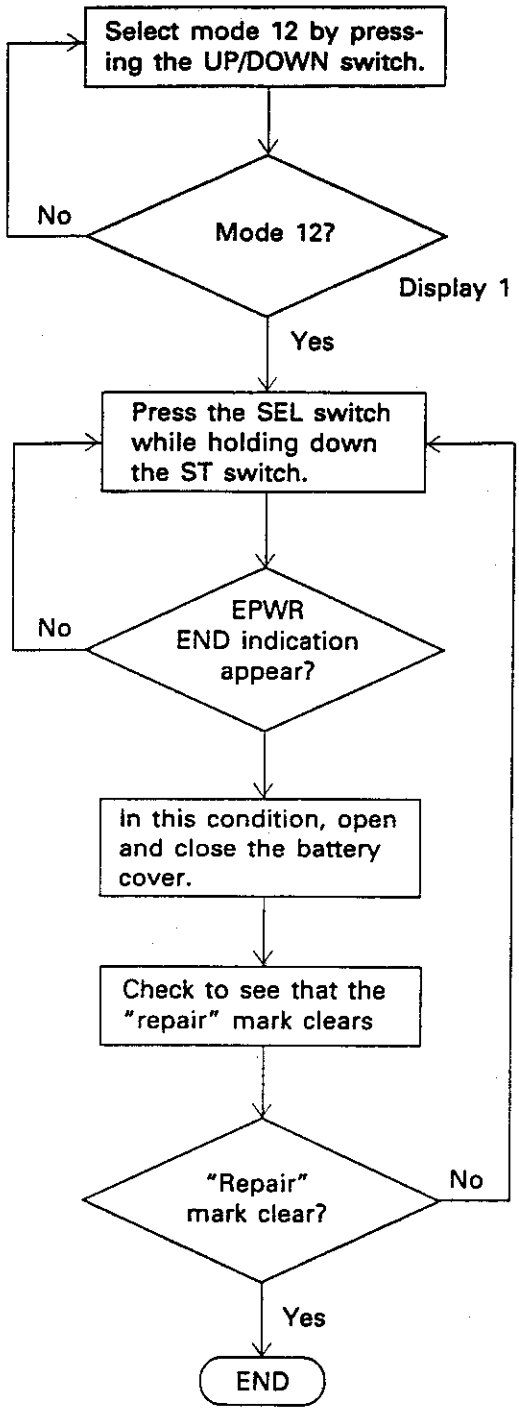

Select mode 11 by pressing the UP/ DOWN switch.
Press the SEL switch while holding down the ST switch.
Display 1
No
EPWR END indication appear?
Yes
END

Display 1



⑳ Clearing the Repair Mark ——— 12

◎ If, after operating any repaired section, the repair mark does not clear, follow these procedures.

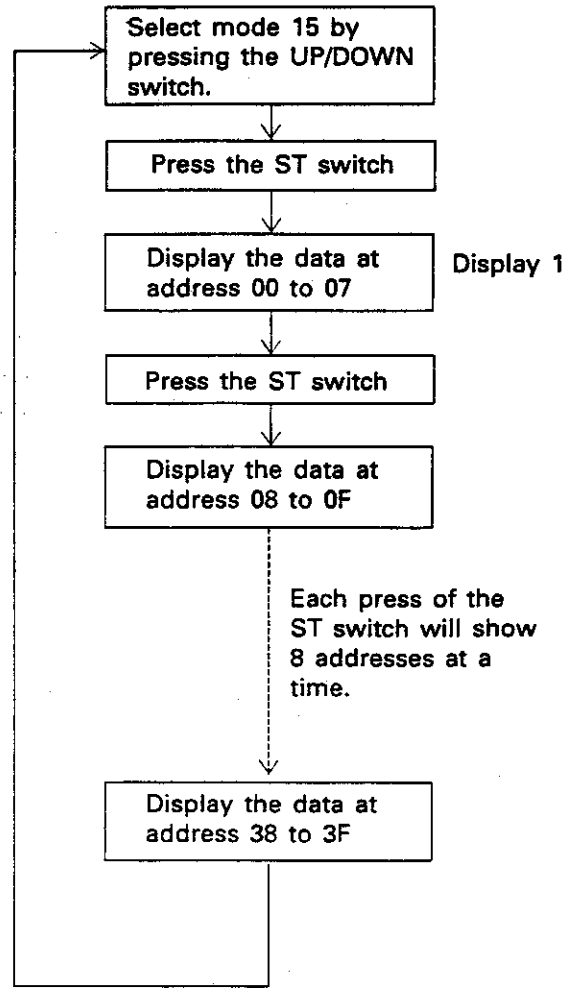


Display 1

```
REE630  12
 Repair mark erase
  start-sw on
    & sel-sw on
```

㉑ Displaying E²PROM Data ------- 15

◎ This mode dumps the data in the E²PROM (64 items) to the LCD on the CK-2.


Select mode 15 by pressing the UP/DOWN switch.
Press the ST switch
Display the data at address 00 to 07
Display 1
Press the ST switch
Display the data at address 08 to 0F
Each press of the ST switch will show 8 addresses at a time.
Display the data at address 38 to 3F

Display 1

[00]	[01]	[02]	[03]
□□□□	□□□□	□□□□	□□□□
[04]	[05]	[06]	[07]
□□□□	□□□□	□□□□	□□□□

☆ Contents of EEPROM initialization data

(Figures are in hexadecimals)

Address	Data Upper Byte Lower Byte	Contents Upper Byte	Lower Byte
00	0000	Damage A	Damage B
01	0400	BODY status	Frame count
02	2C88	TV (manual)	TV (TV priority)
03	2828	AV (manual)	AV (AV priority)
04	50FF	Exposure correction value	Reserved
05	0000	Mode	
06	0000	Release count	
07	1630	E^2PROM check code (US code set to 1631)	
08	7306	Aperture offset / Initial position	Auto loading
09	000A	All speed times / MU-DUTY ratio	W2 ratio
0A	3906	P-ZOOM DUTY ratio factor	
0B	0004	Flat flash delay time	Z pulse offset
0C	FFFF	Reserved	
0D	8000	Shutter speed offsets	
0E	0000	αB	γB
0F	0000	βB1	βB0
10	0000	βB3	βB2
11	0000	βB5	βB4
12	0000	βB7	βB6
13	0000	βB9	βB8
14	0000	βB11	βB10
15	0000	αC	γC
16	0000	βC1	βC0
17	0000	βC3	βC2
18	0000	βC5	βC4
19	0000	βC7	βC6
1A	0000	βC9	βC8
1B	0000	βC11	βC10
1C	4049	BYC0	γC0
1D	FFFF	Lock voltage	Sequential drive voltage
1E	FFFF	Rewind lock voltage	Warning voltage
1F	0003	Flash charge voltage	Red eye firing time

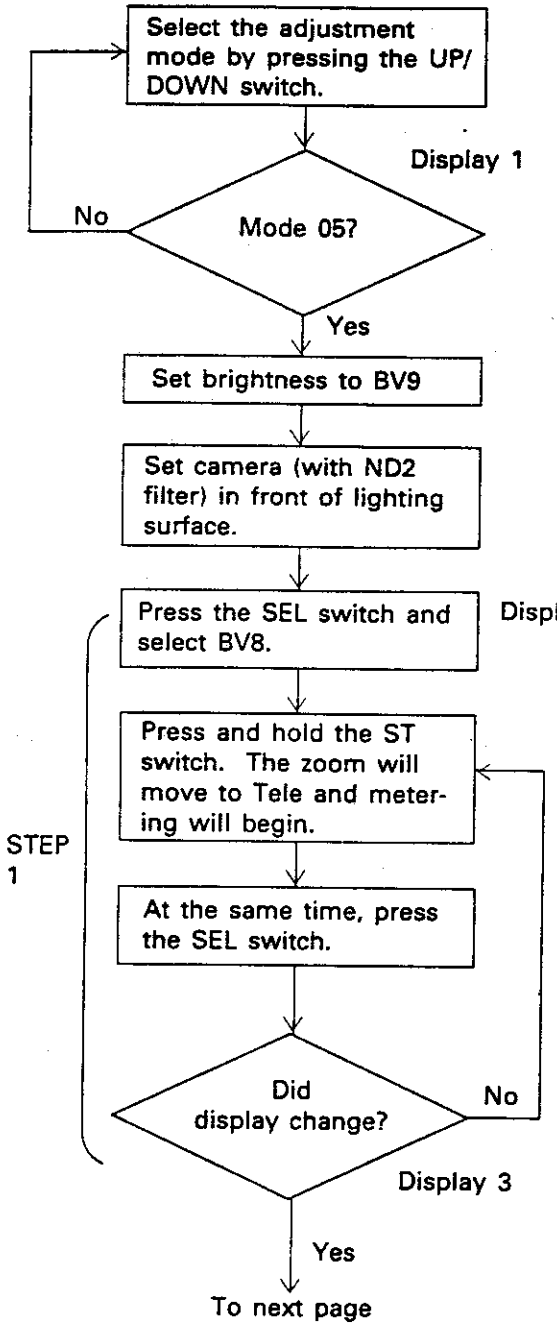
Address	Data Upper Byte Lower Byte	Contents Upper Byte	Lower Byte
20	FFFF	Two image distance	
21	2614	AF threshold T	AF threshold W
22	1440	Contrast limit	AF illumination level
23	80B4	Cam factor B Tele	Aberration Tele
24	0A82	Aberration Wide	Aberration Standard
25	FFFF	Metering correction High	Metering correction Medium
26	FFFF	Reserved	Metering correction Low
27	FFFF	FC adjustment 1	
28	FFFF	FC adjustment 2	
29	FFFF	FC adjustment 3	
2A	0000	Release focus error advance	
2B	0000	Release focus error retract	
2C	FFFF	Play Tele	Play Wide
2D	2020	Cam play Tele	Cam play Wide
2E	0400	Backlight criterion	
2F	200F	Noise filter	
30	80F0	Drive correction conditions	
31	4080	Drive correction	
32	2227	Normal shooting range	
33	4F6C	Macro shooting range	
34	1C67	Cam factor A	
35	8080	Cam factor B	
36	F8EC	Aberration 1	
37	5D63	Aberration condition 1	
38	F8DF	Aberration 2	
39	5256	Aberration condition 2	
3A	F8EC	Aberration 3	
3B	656B	Aberration condition 3	
3C	2008	AF limit	
3D	FFFF	Reserved	
3E	FFFF	Reserved	
3F	FFFF	Reserved	

◎ Metering adjustment and checking procedures when using the Kyoritsu EF8000 EE tester with an ND2 filter on the camera.

- When using an ND2 filter (commercially available), the EV value will be 1 unit lower than without the filter.

Adjustment mode	Average	Spot	Check
EF 8000 BV value	BV6 — BV9 — BV12 — BV15	BV9 — 12	BV6 — BV15
	↓ ↓ ↓ ↓	↓ ↓	↓ ↓
CK-II BV value (select)	BV5 — BV8 — BV11 — BV14	BV8 — 11	BV5 — BV14

⑥ Metering Adjustment (Average) ------ 04


Select the adjustment mode by pressing the UP/ DOWN switch.
Display 1
Mode 05?
No
Yes
Set brightness to BV9
Set camera (with ND2 filter) in front of lighting surface.
Press the SEL switch and select BV8.
Display 2
Press and hold the ST switch. The zoom will move to Tele and metering will begin.
At the same time, press the SEL switch.
STEP 1
Did display change?
No
Display 3
Yes
To next page

◎ Close the rear cover of the camera to shut out all light from outside, particularly from entering the viewfinder.

Display 1

```
REE630  04.0
 BV  A  Adj
  STEP1  Bv=7
   [  ] [  ]
```

Display 2

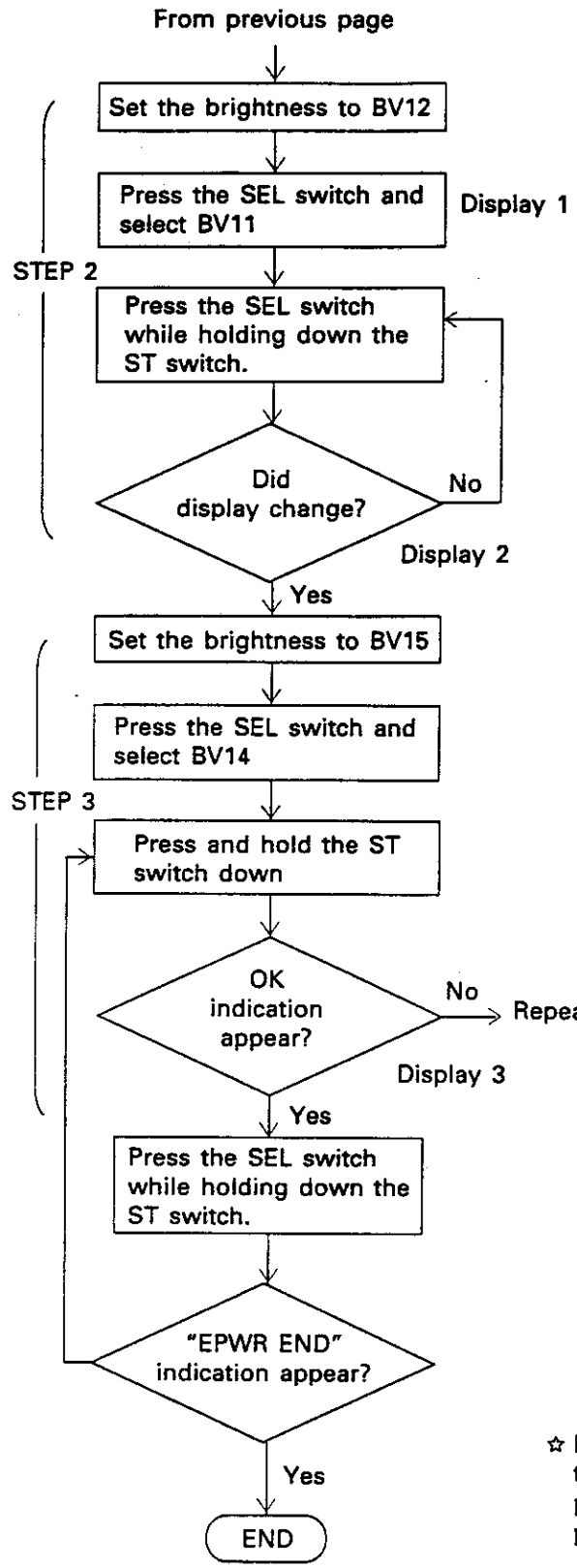
Changes when SEL switch is pressed

```
REE630  04.□
 BV  A  Adj
  STEP1  Bv=8
```

Brightness selection

Display 3

```
REE630  04.□
 BV  A  Adj
  STEP2  Bv=10
```



Display 1

```
REE630  04.□
 BV  A  Adj
  STEP2  Bv=11
```

Display 2

OK/NG indication

```
REE630  04.□
 BV  A  Adj
  STEP3  Bv=14        □□
  (□□) (□□) (□□) (□□)
```

Display 3

OK/NG indication

```
REE630  04.□
 BV  A  Adj
  STEP3  Bv=14        □□
  (□□) (□□) (□□) (□□)
```

☆ It is common for NG to appear in Step 3 because the data varies slightly each time the ST switch is pressed. To get the OK indication, the checking procedure should be repeated a few times.